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THE INTERACTION OF PREGNANCY AND ASSOCIATED DISEASE*

BY

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Until the early part of this century, when the importance of ante-natal care began to be realized, the subject of general medical diseases associated with pregnancy rather fell between two stools. While not wholly in the province of either the obstetrician or the physician, these diseases were generally regarded as "complications" of pregnancy and treated as such by the obstetrician. Nowadays the obstetrical specialist is almost always also a gynaecologist, and the strongly surgical trend of his gynaecological work directs him more to the study of surgery than of medicine. Recently the growth of endocrinology in relation to gynaecology has been leading him back in some degree to medicine, but I think it is true to say that the obstetrician and gynaecologist who has reached the charge of hospital wards has rarely been able to keep pace with the developments of modern medicine. That being so he ought to (and usually does gladly) seek the co-operation of a physician in regard to cases of pregnancy and labour associated with general disease. For the main burden of what I have to say to you is that the old view of these diseases as complications of pregnancy has now come to be recognized as looking at matters from the wrong end, and that these cases ought usually to be regarded as instances of pregnancy complicating general disease.

The train of my thought on this subject was started by reading about a year ago a brief and modest article in the *American Journal of Obstetrics and Gynecology* in which Drs. Allen and Bauer of Chicago summarized an analysis of 9,696 consecutive uterine pregnancies in their hospital service. Their conclusions were statistically tabulated, but they were also put into words which arrested my attention like a slogan. Thus: (1) "It was five times more dangerous for a woman affected with a medical disease to bear children than it was for a healthy woman"; (2) "A child born to a woman suffering from a medical disease was twice as apt to be stillborn as a child born to a healthy mother."

Statistics in Great Britain

This raised the question in my mind whether the association of general diseases with pregnancy was as significant a factor in relation to maternal mortality and morbidity in this country. I knew of no statistics comparable to those of Drs. Allen and Bauer because, while in American cities almost every woman goes to hospital for her confinement and their statistics of a consecutive series of cases may therefore be regarded as a very fair sample of the population, in this country the patients who go to the maternity hospitals are still only a variable proportion of the population and represent a somewhat selected population. In the search for information on a large scale, from which alone a reliable estimate could be formed, I turned to the Interim and Final Reports of the Committee on Maternal Mortality and Morbidity in England and Wales, published in 1930 and 1932; and to the Scottish Report on the same subject, published in 1935 by Drs. Douglas and McKinley of the Department of Health for Scotland.

These reports together cover some 8,000 deaths, of which just under 25 per cent. were attributed to associated diseases rather than to any obstetric factors. In addition to this I sought information from two other sources. In the first place Dr. Charlotte Douglas of the Department of Health for Scotland kindly gave me access to the schedules concerning maternal deaths in Scotland which have occurred *since* the 1935 report was drawn up, and these were analysed for me by Dr. Dorothea Lang. Of 2,136 deaths she attributed 861—that is, 40 per cent.—to associated diseases. I regard this as probably too high an estimate, but it must be remembered that in making such an analysis there is a large personal equation, and that the schedules are often so sketchily filled up that in many cases more than one opinion might well be formed as to the primary cause of death. In the second place Dr. Lang also analysed the deaths in the Royal Maternity Hospital, Edinburgh, within the last fourteen years. Of a total of 462 she attributed 134, or 29 per cent., to associated diseases.

Here, then, we have four series of maternal deaths, two officially and two unofficially analysed; on the lowest computation 25 per cent. and on the highest 40 per cent. of the totals are attributed to associated diseases. That gives us a general idea of the dimensions of the problem. In passing it is of interest to note that in each of these series of deaths the same three disease groups are found to dominate the picture almost to the exclusion of anything else—namely, heart disease, non-tuberculous respiratory disease, and kidney disease.

The death of the mothers in these cases is not the whole of the tragedy; there is also the comparative fruitlessness of the fatal pregnancies; in other words, the effect of the diseases upon the pregnancies, or upon the health of the child if born alive, is the corollary to the dangerous effect of pregnancy upon the disease. The English reports give no information on this important point, but in the 1935 Scottish report, covering over 2,000 maternal deaths, we found that in only 40 per cent. was the child born alive. In the other 60 per cent. the mother had either died undelivered or before her death had aborted, or had been delivered prematurely or had given birth to a still-

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born child or to a living child which had not survived for more than a comparatively few days. That figure, of course, includes a very large number of obstetrical emergencies, and is not confined merely to cases of associated disease. But if we confine our attention to the latter and choose the main disease groups we obtain these figures:

Maternal Deaths due to:	Foetal Deaths:
Heart disease	59 per cent.
Non-tuberculous respiratory disease	70 ,,
Renal disease (including pyelitis)	68 ,,
Tuberculosis	55 ,,
Anaemia (?+malnutrition)	42 ,,

The corresponding figures for the 2,136 maternal deaths in Scotland investigated since 1935 showed:

Maternal Deaths due to:	Foetal Deaths:
Heart disease	65 per cent.
Non-tuberculous respiratory disease	57 ,,
Renal disease (including pyelitis)	60 ,,
Chronic and acute nephritis alone	76 ,,
Anaemia, malnutrition, debility	46 ,,
Tuberculosis	60 ,,

From the humane point of view this aspect of the problem is perhaps less important, but from the national standpoint in these days of a falling birth rate it is very significant.

Now it is obvious that to analyse any number, however large, of maternal deaths is by no means an accurate method of assessing the actual incidence of associated diseases, because it takes no cognizance of the patients who suffer from these diseases but survive. There is, so far as my knowledge goes, no accurate means of assessing the actual incidence of associated diseases in pregnancy, and I can present no figures parallel to those of Allen and Bauer. An attempt was made to gain some knowledge on this point in connexion with the investigation on which the 1935 Scottish report was based, for in the course of their analysis of the mortality figures the investigators felt that "much of the information could not be fully used without comparable details for mothers who survived. Accordingly an inquiry into the circumstances attendant upon all births in Scotland over a period of six months was instituted. It was purely voluntary, and the schedules were completed by the doctor or midwife." The returns, which were in many respects incomplete and imperfect, covered 39,205 births, and one rough conclusion which may be drawn is that in 10 per cent. of the mothers there was a definite deterioration in health during pregnancy, most of which was attributable to the coexistence of general diseases. How far this deterioration was permanent I have no means of knowing.

These morbidity figures for Scotland showed that the proportionate incidence of the more important disease groups was parallel to their proportionate roles in the mortality figures, with the striking exception of heart disease. Thus the incidence of non-tuberculous respiratory disease (including in order of frequency influenza, bronchitis, asthma, and pneumonia) was 3 per cent.; that of kidney disease 3.3 per cent.; and that of heart disease 0.9 per cent. It is surely a very striking commentary on its dangers that heart disease should be below 1 per cent. in its incidence in over 39,000 pregnancies in Scotland, and yet in both the English and the Scottish reports should be found responsible for over 4.9 and 7.5 per cent. respectively of the total maternal deaths from *all* causes, both obstetrical and medical, and in each series for about 25 per cent. of the deaths attributed to associated diseases.

So much, then, for the importance of these associated diseases in pregnancy. I have tried to show that they account for something between one-quarter and one-third of maternal deaths, and that in those mothers who survive they cause definite ill-health in some 10 per cent. of cases. Lastly, they are accountable for a huge wastage of foetal and neo-natal life.

Some Interesting Problems

My next point is that the association of medical diseases and pregnancy presents us with some peculiarly interesting problems. Disease means that some organs are partially disabled. Pregnancy means that increased demands are put on all the mother's organs. Therefore, if pregnancy occurs in a woman who is already suffering from disease it superimposes conditions of strain upon already disabled organs; while if disease originates after the pregnancy has already begun it introduces an element of disablement to the pre-existent conditions of strain. Further, it may be assumed that the pregnancy–strain element is capable of being assessed with some approach to accuracy, while the influence of the disease is generally less capable of measurement. We are therefore dealing with the interaction of two sets of factors—one more or less known, the other more or less unknown—and the situation partakes of the character of a clinical experiment. To watch how the diseased organs behave under the new conditions becomes a fascinating study, while to determine whether the experiment may safely be allowed to continue or whether and just when it must be interrupted calls for the exercise of a wide knowledge and a nice judgment.

It is not necessary to recall to your recollection all the physiological changes in the maternal organism produced by pregnancy. The fact that only the woman of perfectly sound health of body and mind can adapt herself to the new conditions without suffering from some symptoms of difficulty is familiar to us all, as is also the significant fact that such a woman feels triumphantly and exuberantly well during pregnancy, presumably because all her organs are working under high pressure, so to speak, yet without undue strain. But so complex is the necessary adaptation that if disease exists the affected organ is liable to suffer further detriment, while in other cases an occult weakness may become revealed for the first time during pregnancy. May I try to illustrate my thesis by one or two examples?

Cardiac Disease

Consider, for example, diseases of the heart, most commonly chronic endocarditis of rheumatic origin. For my purpose it matters not what the exact nature of the heart lesion is, nor even whether the organic defects are or are not fully compensated. The point is that soon after pregnancy begins the heart enters upon a period of progressive strain which may last for several weary months and culminate in the severe muscular effort of labour.

That the normal heart is able to bear the strain of pregnancy and labour is obvious, and I do not suppose that with healthy patients we often give any thought to the matter. But that astute and painstaking observer the late Sir James Mackenzie has told us that even the healthy heart does give indications of the strain of pregnancy. Probably all of you who are especially interested have read his classical monograph on *Heart Disease and Pregnancy* —a little book which is full of wisdom of a much wider application than its immediate subject, salted with devastatingly candid criticisms of both obstetricians and physicians. That sagacious old Scot, in some respects so reminiscent of Thomas Carlyle, based his statement characteristically on his own personal observation of such signs as the restriction of the response to effort, on the

slight tendency to oedema at the bases of the lungs recognizable only on careful auscultation, on the tendency to overfilling of the veins of the lower limbs, and on the pulsation of the jugular veins. He summarizes his views in these words: "It is perfectly evident that in the pregnant state, towards the later months, the heart is embarrassed in healthy women; for the woman is not capable of so much exertion as she was accustomed to undertake, and becomes breathless during efforts which at other times would not have inconvenienced her." If we accept Mackenzie's statement then, *a fortiori*, the diseased heart is bound to manifest more obvious reactions to the same conditions, and it is the detection and proper evaluation of these that is the practical problem.

Now it is no part of my purpose to discuss the methods of detecting incipient heart failure, of preventing its development, or of treating it when once declared. These points are familiar to you all. I would, however, just summarize the experience we have had in the Royal Maternity Hospital, Edinburgh, where Dr. Rae Gilchrist acts as our advisory physician. On the whole that experience in the last twelve years has tended to imbue us with a tempered optimism, provided we get these patients under our supervision early in pregnancy. For we never see in such women the advanced degree of congestive heart failure often found in women admitted as emergency cases later in pregnancy. This is obviously *a point of very wide application*, for if congestive heart failure can be avoided by adequate treatment and supervision under the conditions of strain imposed by pregnancy, then all the more can similar care avert heart failure in non-pregnant patients. Dr. Gilchrist attributes such success as we have achieved to prolonged rest in bed, to the use of large doses of digitalis on modern lines, and to the exhibition where necessary of the extraordinarily efficacious diuretics of the mercurial type such as salyrgan, neptal, and novurate.

A second point is that the study of heart disease in pregnancy demonstrates impressively the enormous power of even a *damaged* heart to adapt itself to a gradually increasing burden, and even to post-operative shock and anaesthesia, provided congestive failure is not present. The key to that statement surely lies in the words "a gradually increasing burden," for it is a physiological truism that all our organs have an amazing power of adaptation provided the stress is applied gradually.

Thirdly, we have been impressed with the futility of any operative procedure in the presence of congestive heart failure. It is the straw that breaks the camel's back. As our experience has increased we have found ourselves gradually doing fewer Caesarean sections in heart cases, because we have seen that ordinary labour is surprisingly well borne. The labours of cardiac patients are indeed often remarkably and inexplicably easy. A fair proportion of them occur prematurely, and in these the small size of the baby makes for an easy labour. But even at full time the labour is often unexpectedly easy.

Fourthly, the danger is not always completely over when the labour is passed. In patients who have shown any pronounced degree of heart failure before labour, exhaustion of the cardiac reserve sometimes occurs suddenly and fatally a few days later. Care must therefore not be relaxed.

Fifthly, it is remarkable how slight is the embarrassment induced by pregnancy in cases of congenital heart disease. This teaches us that the prognosis must be better for such of these individuals as reach puberty than might be supposed. Congenital cases are but a small percentage of the total coming under observation in any ante-natal clinic, but we have not seen one go on to any sign of congestive failure. This contention is to some extent supported by individual cases reported in the literature—for example, Firket's patient, a woman with combined mitral stenosis and auricular septal defect, who had eleven uneventful pregnancies and three abortions and lived to be 74 years of age.

Lastly, our experience seems to show that death from congestive heart failure in young or middle-aged married women could be prevented or postponed if, after one or two pregnancies, more of them were sterilized. It not infrequently happens that having weathered one or two pregnancies successfully a woman, after an interval of some years, during which in all probability contraception has been practised, presents herself at the hospital about the sixth month or later with early signs of heart failure. Such cases do badly: sterilization earlier might well have prolonged the life of such a patient.

Anaemia

I turn next to anaemia as a subject in which medicine and obstetrics have found much common ground in recent years and in which the contact has been the means of considerably advancing knowledge. The fact that the tissues of women in pregnancy are unduly filled with fluid has long been observed, and the old clinicians used to attribute it to what they described as "the plethora of pregnancy."

When the study of the blood began to be placed on a scientific basis it was recognized that in pregnancy the increase in the quantity of the body fluids was due not strictly to "plethora" but rather to a dilution of the blood by an increase in its fluid constituents. In recent years numerous observers have carried out repeated systematic observations of the blood of pregnant women at frequent intervals throughout the whole period of gestation and the puerperium, and from these observations it appears that there is uniformly a definite fall both in the number of red cells per cubic millimetre and in their haemoglobin content. This fall occurs towards the end of the third month, reaches its lowest point about the seventh month, and persists to about a fortnight before term, when conditions usually improve. Within a fortnight after delivery there is a rapid improvement, which continues during the next few months, and by six months after delivery the blood should be once more in a normal condition.

We have also come to appreciate in recent years how very real are the demands which the upbuilding of the foetus makes upon the mineral constituents of the maternal blood through the placental interchanges, and that unless the mother's diet contains an adequate supply of these substances her blood and tissues will become depleted of them to an extent which may cause more or less serious symptoms. The "harmonious symbiosis" which may be said to describe the relation of mother and foetus in a healthy pregnancy under perfectly hygienic conditions thus degenerates into something indistinguishable from foetal parasitism in the undernourished mother. The principal demands are for iron, calcium, and phosphorus. The possible depletion of the mother's tissues in respect of calcium is well known in connexion with the teeth and with the disease of osteomalacia, while more recently it has been considered as a possible explanation of uterine inertia in labour. If in spite of drawing upon the mother's resources the foetus remains short of calcium and phosphorus the result is seen in a predisposition to

rickets after birth. But in relation to anaemia our main interest is concerned with iron; for while there is no direct transference of blood from the mother to the foetus, yet the latter has to derive from the former the materials for making its own haemoglobin. This, as Strauss and Castle point out, means the equivalent of a definite blood loss in every pregnant woman, even in the absence of any actual haemorrhage. Moreover, as the same authorities have proved, "no matter how anaemic the mother, the infant is born with a normal amount of haemoglobin."

Bunge has shown that the milk of a bitch contains the same quantities of mineral substances as the tissues of its offspring except iron, which is present in the tissues of the offspring in a quantity six times greater than in the mother's milk. This store of iron gradually diminishes during the period of lactation, but increases again when the young animal begins to take a mixed diet. In other words, the offspring has a store of iron at birth for the purpose of supplying that substance during the weeks in which it is fed on its mother's milk, which is poor in iron. Hugounenq confirmed these findings in general with regard to the human foetus. Weight for weight the liver of the newborn child contains five times more iron than that of its mother, and this store is apparently accumulated in the last three months of its intra-uterine existence—a point to be linked up with the observation that the loss of red cells and haemoglobin is greatest at this period of pregnancy.

Still another factor has come to be recognized during observations upon pregnant women—namely, the influence of functional disturbances of the gastric secretions. Nearly thirty years ago Faber of Copenhagen showed that the proportion of total and of free hydrochloric acid in the stomach has a direct bearing upon the absorption of iron from the food. The proportion of acid in the stomach varies considerably in different individuals, but Strauss and Castle found that the great majority of the women they studied during pregnancy had a marked deficiency.

Here, then, we have abundant evidence that in pregnancy the haemopoietic system is labouring under a strain. In the healthy woman on an adequate diet it can adapt itself to the conditions of strain without either serious symptoms occurring or lasting damage being wrought. But if the woman be already suffering from anaemia when pregnancy occurs, or if her diet be inadequate in the essential constituents, we have again a condition of what I may call a clinical experiment superimposed by the occurrence of pregnancy.

Thus the physiological hydraemia of pregnancy, combined with dietetic deficiency and possibly some slight hypochlorhydria, may adequately account for the common but mild anaemia of the hypochromic microcytic type. Obviously there may be also other factors at work, such as unhygienic surroundings, and toxic conditions such as chronic nephritis, pre-eclamptic toxaemia, or pyelitis, as well as actual blood loss from obstetrical complications.

Occasionally we meet more severe anaemias of the same type—women with red counts of 3½ millions or less and haemoglobin below 45 per cent.—which are essentially due to the same factors. But Fullerton of Aberdeen, who has studied the subject carefully, believes that in these cases the women were suffering from a definite anaemia before the pregnancy ensued. Both these forms are susceptible to treatment by large doses of iron with hydrochloric acid, fortified if necessary by a proper diet and hygienic surroundings.

The severe hyperchromic macrocytic anaemia of pregnancy is relatively rare in this country, although so common in India as to constitute one of the major dangers of reproduction. Both the clinical picture and the blood picture resemble Addisonian pernicious anaemia. The most important point of difference is that the disease clears up when the pregnancy ends and does not tend to recur (in the absence of another pregnancy), whereas true Addisonian pernicious anaemia of course has that tendency. Strauss and Castle have shown it to be due to much the same mechanism as true pernicious anaemia. It will be recalled that this involves an essential reaction between an intrinsic stomach factor present in normal gastric juice and an extrinsic dietary factor associated with vitamin B. In their cases Strauss and Castle found that in pregnancy the breakdown was due to the temporary absence of the intrinsic stomach factor combined with an iron deficiency resulting from foetal demands or dietetic errors, or both. Iron, liver extracts, and occasionally transfusion of blood are the lines of treatment, and not infrequently the pregnancy has to be interrupted.

Here again we have an example of the interaction of the physiological strain of pregnancy and the processes of disease. Here also, I submit, is a field for co-operation between physician and obstetrician.

Polyneuritis

This modern conception of certain anaemias as deficiency diseases naturally led my thoughts to another sometimes associated with pregnancy—namely polyneuritis, in regard to which a similar aetiological claim has been put forward. This is generally regarded as a rare condition, but it is probable that it sometimes escapes diagnosis and that its rarity is more apparent than actual. Most often it occurs in a woman who has been suffering for a considerable number of weeks from hyperemesis gravidarum, so that it usually makes its appearance about the fourth or fifth month of pregnancy. The early symptoms are vague and mainly subjective—extreme weakness and hyperaesthesia of the skin—and there is only too much reason to believe that these have occasionally been looked upon as merely further hysterical manifestations in a woman thought to have been suffering from so-called neurotic vomiting. When actual paresis of the muscles appears and tendon reflexes disappear the condition becomes much more recognizable. Still later there ensues a state of mental confusion and obfuscation, of the type found in association with alcoholic neuritis (Korsakoff's syndrome) and characterized by loss of a sense of place and time and of recent memory. Regarded as a rare form of pregnancy toxaemia and treated as such even to the point of therapeutic abortion, polyneuritis in pregnancy has proved a very fatal condition. Plass and Mengert collected twenty-eight cases from the literature, with a mortality of no less than 68 per cent. My own experience is very limited, but I can recall four cases which corresponded to the description given, although an accurate diagnosis was made in only one. One of these patients died during an induced delivery, and the others very slowly recovered after the artificial termination of pregnancy.

Theobald first drew attention to the striking similarity between this disease in pregnancy and the endemic form of polyneuritis known as beriberi. It is stated that the pathological degenerative changes in the nervous system are identical in the two conditions. Beriberi is accepted as being due to a deficiency of vitamin B_1, which is now accordingly spoken of as the antineuritic factor.

Now experiments on animals show that during pregnancy there is a transference of vitamin B from the mother's tissues to the foetus, as well as to the mammary glands, for the functions of which it is essential. In a healthy woman on an adequate diet this drainage of vitamin B can be compensated without the appearance of deficiency symptoms. But if the woman is vomiting severely, a vitamin B starvation is caused along with starvation in respect of all other elements of diet, and in some cases a polyneuritis may apparently result. On the other hand, dietary deficiency alone may cause it in pregnancy, for the condition is much commoner in those parts of the world in which beriberi is endemic—that is, in which a large proportion of the population exist on a diet deficient in vitamin B. In these latter cases the superimposition of what I have called the experimental conditions of pregnancy with its increased demand for vitamin B may thus reveal for the first time a pre-existing but hitherto occult deficiency in the mother's tissues. Lastly, some evidence is slowly accumulating of the good results of prompt treatment of the condition by a diet rich in vitamin B or by concentrated extracts of the vitamin.

Such is the argument. Whether we can as yet adopt this new view in its entirety may be open to debate. What is not in doubt, as it seems to me, is that it offers a small but most interesting field for co-operative research by neurologists and obstetricians, and teaches us, when we are treating prolonged cases of hyperemesis, to keep a watchful eye upon the nervous system and to see to it that an adequate supply of vitamin B is provided in such diet as the patient is able to assimilate.

Diabetes

Diabetes mellitus is another disease sometimes associated with pregnancy in which the interaction of the physiological and the pathological conditions provides an interesting study. It is, I think, undoubtedly true to say that the discovery of insulin and the increasing understanding of the whole subject of carbohydrate metabolism which has followed it have robbed the association of pregnancy with diabetes of its former terrors. But that does not mean that the association is no longer fraught with considerable risk to the mother and even more to the foetus. For one thing, the treatment of diabetic women with insulin is making the association much more frequent than before. In pre-insulin days it was definitely rare, because the diabetes brought about a depression of ovarian activity and an atrophic condition of the whole genital tract which militated against the occurrence of conception. Nowadays if, under insulin, the diabetic woman can be kept in approximately normal health, her whole endocrine system, apart from the pancreas, may function as in a normal woman, and there is nothing to prevent conception. The evidence of diabetic clinics is clear on this point.

The occurrence of conception in a diabetic woman is, however, another example of physiological conditions of extra strain being superimposed upon a disease. If we consider the influence of pregnancy upon the carbohydrate metabolism of the healthy woman we find evidence of strain or at least of a disturbance of the normal conditions. Apart from the accepted increase in the basal metabolic rate, which is probably linked up with increased endocrine activity, the most obvious example of this is the frequency with which sugar appears in the urine during pregnancy. For this, as you are aware, there are several possible explanations. The sugar may be lactose, about which I would only say that while lactosuria is common enough in the puerperium it is not in our experience very common in pregnancy. Moreover, the recognition of lactose by the appropriate tests does not by any means exclude, and may even mask, a more significant glycosuria, unless tests are applied for glucose also.

In the second place, the glycosuria may be of the so-called alimentary type, or, as Skipper prefers to call it, "the impaired carbohydrate tolerance of pregnancy." This is due to the liver being less able than usual to synthesize and retain glycogen, so that the ingestion of any considerable quantity of carbohydrate is followed by hyperglycaemia and glycosuria. So commonly is this condition found in the first three months of pregnancy that it was propounded as a diagnostic test for early pregnancy by Frank and Nothman, and the so-called adrenaline and phloridzin tests are essentially just modifications of it. But none of these tests has the degree of specificity and uniform accuracy necessary for that particular purpose. While not of itself serious, alimentary glycosuria is important, because it is almost impossible to differentiate it from a mild but true diabetes *during pregnancy*. After delivery the glycosuria of true diabetes persists, the other disappears.

In the third place, glycosuria in pregnancy may be, and probably most commonly is, due merely to a lowering of the renal threshold for sugar. The cause of this increased permeability of the kidney is not understood, but it is legitimate to speculate that it is connected with the activity of the anterior pituitary lobe.

There is still another apparently physiological point to be considered—namely, the frequency with which acetonuria occurs in pregnancy. Lambie in his masterly review of the subject states that acetonuria occurs in more than 30 per cent. of normal pregnancies. It indicates, of course, that there is a disturbance in the normal proportion of fats and sugars undergoing simultaneous combustion in the body and a significant rise in the ratio of ketogenic to anti-ketogenic substances. Lambie attributes the acetonuria in part to the lowered carbohydrate tolerance which we have discussed and in part to the demands of the foetus for carbohydrate. But whatever be the exact explanation of the phenomenon there is no question that it complicates in some measure the ease of estimating the significance of a glycosuria, just as it increases the difficulty of controlling the condition by diet and seriously increases the risk of coma in actual diabetics.

I need not dwell upon the dangers of pregnancy to the diabetic mother, because whereas Matthews Duncan in a famous communication in 1882 painted a very gloomy picture, and Whitridge Williams in 1909 collected sixty-six cases with a maternal mortality of 27 per cent. at or shortly after labour (mostly in coma) and an additional mortality of 23 per cent. within two years, yet the records since 1923, when insulin became available, tell quite another story. Thus Skipper collected 118 cases with an immediate maternal mortality of only 9.3 per cent., and in thirty-three cases under his own observation at the London Hospital there was no immediate mortality. In the Royal Maternity Hospital in Edinburgh during the last ten years we have had twenty-one patients with diabetes, two of whom have been under our care for two pregnancies each. Of these twenty-three cases, three left the hospital before delivery and have not been traced. But among twenty deliveries in eighteen patients there was no maternal mortality, although it has been impossible to follow the patients up and find out the ultimate results.

While, therefore, the outlook for the diabetic mother has enormously improved, there has been no corresponding improvement regarding the influence of diabetes upon the pregnancy, for the foetal mortality still remains tragically high. Abortion is very common in diabetics, and intra-uterine death in the later weeks adds to the toll; while not infrequently its undue size causes the death during delivery of many a foetus which has survived until term, and yet others die shortly after birth. In Williams's pre-insulin series of cases the foetal mortality, including abortions, was 41 per cent. In 136 pregnancies collected by Skipper the foetal mortality was 45 per cent., and in the thirty-seven pregnancies which he himself observed it was 40.5 per cent. In our twenty pregnancies in the Royal Maternity Hospital in Edinburgh the foetal mortality was 35 per cent.

Priscilla White, writing from Joslin's special clinic in Boston, gives an interesting series of figures. In cases in the pre-insulin era the stillbirth and abortion rate was 44 per cent. After the introduction of insulin there was a reduction in the foetal mortality to 34 per cent., while in cases under the direct and careful observation of the clinic it amounted only to 23 per cent. "Stillbirths and the macerated foetus of the giant type," she writes, "are nearly as characteristic of diabetic pregnancies which are allowed to come to term as they were in the pre-insulin era." Her solution of the problem is the delivery by Caesarean section of "the fully developed but chronologically premature infant." Whether we agree with that view or not, her figures, and those others that I have quoted, are an eloquent plea for the careful ante-natal supervision of such patients by a physician well versed in the management of diabetes, and a clear proof that all such cases must be treated on strictly individual lines and not by any mere routine. For treatment to be fully successful it seems to me that co-operation between the obstetrician and the physician is a *sine qua non*.

Conclusion

I have chosen these three or four diseases to illustrate my thesis that their association with pregnancy can be understood only in the light of the physiological strain of pregnancy. Other examples might equally well have been chosen. I was tempted, for instance, to refer to the temporary benefit in phthisis brought about by the physiological ascent of the diaphragm, compressing the lung and closing up cavities; and to the disastrous relapses which follow the abrupt and ruthless removal of this factor when the uterine tumour suddenly subsides after labour. I was tempted also to refer to kidney diseases, in which the physiological strain is so subtle and so uniform that, as Gibberd has succinctly expressed it, "pregnancy is the best test of kidney function." But these are large subjects, and to have indulged myself would have been to put a wholly unwarrantable tax upon the kindly patience with which you have listened to me.

If I have succeeded in interesting you in my main thesis you will find additional interest in working out its application in these and in other conditions at your leisure.

The London hospitals have received during the past year a present of over 5,000 gramophone records by the courtesy of the B.B.C. and the record manufacturing companies. These records, which have been used for broadcast purposes, are delivered to the hospitals free by the Gramophone Company in accordance with a schedule drawn up by King Edward's Hospital Fund for London in collaboration with the B.B.C.

CALCIUM AND PHOSPHORUS DEFICIENCIES IN A POOR HUMAN DIETARY

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Dietary surveys and experiments on the feeding of milk and other supplements to children and adults suggest that the diets of various classes of the population both in this and in other countries may be deficient for the maintenance of health. These observations in groups of human beings have led to experiments in which rats were fed on diets similar to those in common use among people whose nutritional state was being studied. One of the best-known of these experiments is that of McCarrison (1926–7), in which a striking parallelism was shown between the health and physique of rats and the health and physique of different tribes in India whose diets were fed to different groups of rats.

In an experiment of this type Orr, Thomson, and Garry (1935) maintained a large colony of rats for two and a quarter years on a diet which approximated the average diet eaten by a working-class community in Scotland as ascertained by dietary survey (Davidson *et al.*, 1933). Another colony received the survey diet with the addition of green food and unlimited milk. Four generations of animals were reared. The rats on the human dietary supplemented with green food and milk were quite normal, and in all respects were equally as healthy as rats kept on the Rowett Institute stock diet (Thomson, 1936). On the other hand, with a similar environment and heredity, the animals fed on the survey diet alone showed a slightly impaired reproductive capacity, a considerably increased death rate, a retarded rate of growth, a lowered haemoglobin content of the blood, and a clinically poorer condition. It was thus shown that the addition of green food and milk converted a deficient human diet into one that was adequate, though Orr and his co-workers were unable to state which factor or factors in this diet were responsible for the benefits obtained.

An analysis of the diet showed that it was very deficient in calcium and phosphorus, and the addition of green food and milk greatly increased the content of these elements. The hypothesis that this deficiency might be a major factor in the difference in health and physique of the two groups of rats was strengthened by the fact that numerous experiments with large animals have demonstrated that calcium and phosphorus lack is a common cause of deficiency disease, retardation of growth, and low viability in young at birth (Osborne and Mendel, 1918; Elliot, Crichton, and Orr, 1922; Elliot and Crichton, 1926). Orr (1930) has reviewed the influence of mineral salts in stock feeding, showing the benefits of adding calcium and phosphorus in various forms to the rations of pigs, cattle, and poultry. Similar deficiencies may occur in human diets. A survey made of 607 diets in Scotland in 1926-7 (Orr and Clark, 1930) showed that as family income fell the diet became poorer in calcium. In 205 of the families the intake was less than 0.3 gramme per head per day. In a feeding experiment with the children of these families it

was found that a considerable increase in growth and a definite improvement in health followed the supplementary feeding of either whole milk or separated milk in quantities of from 3/4 pint for younger children to 1¼ pints for older children. As the separated milk, without the fat or the fat-soluble vitamins contained in the fat, had practically the same result as the whole milk, it was thought that the great increase in the calcium and phosphorus intake due to the milk might be an important, and possibly the most important, factor in producing the improvement in growth and health, and that the remarkable results obtained earlier by Corry Mann (1926) in children from the increased consumption of milk might be due largely to the same factors.

In view of the obvious importance of calcium and phosphorus it was decided that these elements should be the first to be tested in the experiments now being developed at the Rowett Research Institute in the investigation of specific dietary deficiencies.

The Experiments

The Diets.—Three groups of rats were fed on different diets. Group 1 was given the survey diet described by Orr *et al.* (Diet 1), whilst Group 2 received the survey diet in which were incorporated the same amounts of milk and green food as were used in the earlier experiment (Diet 2). Diet 3, fed to Group 3 rats, was constructed by the addition of salts of calcium and phosphorus to Diet 1 in such amounts that its calcium and phosphorus contents were the same as those of Diet 2.

Analyses for calcium and phosphorus were carried out daily for a fortnight on samples of Diets 1 and 2, excluding the Sunday diets, which for each group consisted of bread and water only. Average figures for the whole series of analyses are given in Table I.

TABLE I.—*Analysis of Diets 1 and 2 (Averages for Twelve Samples of Each Diet)*

	% Ca	% P	Ca/P
Diet 1	0.121	0.249	0.50
Diet 2	0.284	0.338	0.84
Difference	0.163	0.089	

Diet 3 was constructed by adding the following amounts of salts to Diet 1 per 100 grammes wet weight: calcium lactate (B.P.), 0.324 gramme; Na_2HPO_4 (analytical reagent), 0.105 gramme.

The accuracy of this addition and the efficacy of mixing the added salts with the rest of the diet were checked by the analysis of samples of Diets 1 and 3 taken on the same day. The results are given in Table II, the figures for the recovery of the added calcium and phosphorus being in good agreement with the amounts actually added.

TABLE II.—*Analysis of Diets 1 and 3*

	% Ca	% P
Diet 1	0.099	0.253
Diet 3	0.278	0.340
Difference	0.179	0.087

The animals used were Lister Institute hooded rats, bred at the Rowett Institute for several generations before the start of the experiment. They were bred from stock, the experiment beginning at weaning. Three groups of 21-day-old rats, each containing twenty-four males and twenty-four females, were used. In each group twelve males and twelve females were kept for breeding, and four males and four females were killed for examination at 40, at 70, and at 100 days of age. In almost every case each male rat in Group 1 had a female litter mate in the same group; in addition these two rats had a male and a female litter mate in both Groups 2 and 3. It was thus possible to compare litter mates of the same age and both sexes in different groups.

The management of the animals was sufficiently like that described by Orr *et al.* to merit but little discussion. The amount of food fed was regulated so that a small quantity was left every day, but the actual food consumption was not measured. Tap-water was given *ad lib.* The rats were weighed at the beginning of the experiment and thereafter twice weekly. The animals killed for examination were radiographed prior to dissection of the upper and lower incisors and the femora, tibiae, and fibulae of both legs. The upper incisors and the bones of the right leg were used for histological examination, while the lower incisors and the bones of the left leg were reserved for chemical analysis. The remaining rats of each group were used for breeding, standard methods being employed.

The experiment is being carried out over three generations, the results reported in this paper dealing almost entirely with the first generation. Data relating to all the generations will be published in full at a later date.

Results

(*a*) *The Rate of Growth.*—The accompanying chart shows the rate of growth of the male rats in the first generation. It will be seen that the growth rates of

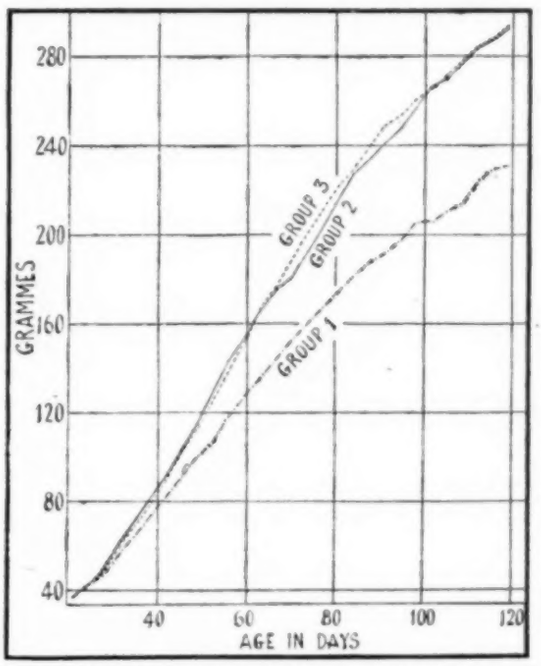

Chart showing the average growth curve of the first generation males, from 21 to 119 days old.

Groups 2 and 3 are identical, and are much superior to that of Group 1. Exactly similar results were obtained with the females, though, as is always the case, the weights were lower than those of the males. The growth curves of the second generation have also been obtained, and it has been found that in this case the Group 3 rats do not grow as fast as those in Group 2, but are still

much better than those in Group 1. The general condition of the rats on Diet 1 was poor; these rats had not the sleek appearance of their litter mates in Groups 2 and 3, who were always in good condition.

(*b*) *X-Ray Photographs.*—In all cases the films showed a striking difference in the degree of calcification of the rats in Groups 1 and 2; very little difference could be seen between Groups 2 and 3. Figs. 1, 2, and 3 (Special Plate), reproducing *x*-ray photographs of litter mates in the three groups, demonstrate this fact.

(*c*) *Histological Examination of the Teeth.*—This examination was used to demonstrate the relative values of the three diets, in the same way as was done by Mullick and Irving (1937) in assaying the nutritional value of Indian diets. Schour and his co-worker (Schour and Ham, 1934) and many others have pointed out that the width of predentin in the rodent incisor tooth offers a very delicate test for the degree of calcification, being wider when calcification is impaired. Longitudinal sections of decalcified upper incisor teeth were cut, stained with haematoxylin and eosin, and the predentin width in the apical part of the tooth measured. The normal value for this width is from 16 to 20 μ. The average results obtained from the first generation are given in Table III.

TABLE III.—*Width of Predentin (μ) in Longitudinal Section in Upper Incisors (Average Results from the First Generation)*

Age in Days	Sex	Groups		
		1	2	3
40	M	29	25	22
	F	31	20	21
70	M	41	23	19
	F	34	22	19
100	M	38	20	21
	F	25	20	21

These results show quite clearly that calcification is deficient in the rats of Group 1 but is normal in those of Groups 2 and 3. In addition it is possible that calcification is most impaired in Group 1 at 70 days, improving after this time. Photomicrographs of teeth from litter mates are reproduced in Figs. 4, 5, and 6. The section of the tooth from the Group 1 rat shows vascular inclusions in the predentin; these were quite commonly found in teeth from Group 1 rats at 70 and 100 days of age, but were always absent in the teeth of rats in the other two groups. The histological examination of the bones failed to reveal any differences which could be compared quantitatively. Results from this examination have not been included in this paper.

(*d*) *Chemical Analyses.*—These are limited to the ash contents of the femur, tibia, and fibula combined, and of the lower incisors. The results are given in Table IV. The percentage of ash in the bones of Group 1 rats is in every case much lower than the corresponding figures for the animals in Groups 2 and 3. The differences between Groups 2 and 3 are not significant. The lowered calcification of the bones of Group 1 rats and the similarity in the calcification of Group 2 and Group 3 animals are more truly expressed when the ash contents (in absolute amounts) of the bones of Groups 2 and 3 are stated as percentages of those of the Group 1 rats. Despite this similarity it cannot, however, be concluded that calcium and phosphorus in inorganic form are equally as available as those elements in milk and green food, since there are no figures for the total calcium and phosphorus contents of the animals. The relative availability can only be decided by balance experiments.

TABLE IV.—*Weight and Composition of Dry Extracted Bones and Teeth (Average of Four Rats)*

			BONES				TEETH			
Age	Sex	Group	Wt. of Bone	Wt. of Bone Ash	Ash expressed as % Group 1	Ash % of Bone	Wt. of Tooth	Wt. of Tooth Ash	Ash expressed as % of Group 1	Ash % of Tooth
days			gramme	gramme			gramme	gramme		
40	M	1	0.1484	0.0532	100	36.06	0.0510	0.0362	100	70.88
		2	0.2005	0.0860	163	42.94	0.0529	0.0389	107	72.70
		3	0.1953	0.0832	157	43.60	0.0546	0.0398	110	73.09
	F	1	0.1463	0.0567	100	38.58	0.0504	0.0366	100	72.63
		2	0.1869	0.0836	147	44.79	0.0534	0.0393	107	73.64
		3	0.1528	0.0705	124	43.82	0.0519	0.0384	105	74.01
70	M	1	0.2924	0.1317	100	44.88	0.0856	0.0657	100	77.16
		2	0.4392	0.2458	187	55.56	0.1027	0.0790	120	76.94
		3	0.4086	0.2292	174	56.10	0.1000	0.0783	119	78.40
	F	1	0.2232	0.1054	100	46.50	0.0766	0.0596	100	77.53
		2	0.3438	0.1919	182	56.03	0.0910	0.0723	121	79.50
		3	0.3481	0.2034	193	58.42	0.0927	0.0749	125	78.98
100	M	1	0.4075	0.2122	100	51.78	0.1164	0.0878	100	75.44
		2	0.6002	0.3642	172	60.41	0.1362	0.1061	121	77.93
		3	0.6603	0.4142	194	62.70	0.1459	0.1142	130	78.20
	F	1	0.2769	0.1442	100	52.06	0.1043	0.0790	100	75.77
		2	0.4653	0.2895	202	61.88	0.1308	0.1025	130	78.63
		3	0.4897	0.3075	213	62.75	0.1302	0.1020	129	78.65

The tooth-ash figures show much slighter differences between the three groups. This result is in marked contrast to the histological findings, which follow the bone-ash figures closely. This lack of correspondence between the histological and chemical data with teeth has often been noted by us and by other workers, and shows that the histological examination is a much more sensitive test of normal tooth calcification than is chemical analysis.

(*e*) *The Reproductive Performance of the Rats of the First Generation.*—This is shown in Table V.

The figures show that the rats from Group 1 mated less readily, producing smaller litters with a low weaning weight; the reproductive performances of rats from Groups 2 and 3 were considerably better.

TABLE V.—*Reproductive Performance of First Generation Rats*

	Group		
	1	2	3
Average time between introduction of male and birth of litter (days)	48	34	26
Average number born per litter..	8.7	9.7	10.0
Average weight at birth (grammes)	5.30	5.36	5.48
Average weight at weaning (21 days) (grammes)	24.3	32.0	29.3

Discussion

The results quoted show clearly that, using rats *bred from stock*, the improvement in a poor human diet induced by milk and green food supplements can be largely reproduced by the addition of equivalent amounts of calcium and phosphorus salts. This result is in agreement with the work of Sherman and Campbell (1935), who found that the improvement in the nutritional quality of a diet caused by adding dried milk was also obtained by using an equivalent amount of $CaCO_3$. In a recent paper Coward *et al.* (1938) have shown that the addition of calcium and phosphorus salts to a poor human diet fed to rats increased the ash content of the bones. These results are of great interest in confirming our findings, but it is unfortunate that the diets chosen do not approximate

more closely to those actually consumed by man as shown by dietary surveys. Further, we cannot agree, for the reasons given above, that these authors are justified in stating that the calcium in milk is no more available to the animal than is the calcium in inorganic salts. This can only be decided by balance experiments; and indeed the literature on this subject states quite clearly that milk calcium is the more readily available (Givens and Mendel, 1917; McClugage and Mendel, 1918).

Conclusions

It has previously been shown that the nutritional value of a poor human dietary can be greatly improved by the addition of milk and green food supplements. The experiments here reported demonstrate that in rats *bred from stock* this improvement is due largely to the calcium and phosphorus contained in the supplements. This conclusion is of particular interest at the present time, when much stress is being laid on mineral metabolism, and it is being realized that a deficiency of calcium in particular is likely to occur in human diets. An increased consumption of milk, as now widely practised in America, is the most efficient means of ensuring an adequacy in this respect.

We wish to express our indebtedness to Sir John Orr, F.R.S., for his interest and criticism.

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L. Löfgen (*Finska LäkSällsk. Handl.*, December, 1937, p. 937) has searched for a patent foramen ovale among the 785 bodies examined post mortem at the Medico-Legal Institute in Helsingfors during 1935, 1936, and 1937. No child under 10 was included in this study, and there were only 170 women. In as many as 120 cases (15.3 per cent.) a patent foramen ovale was found. The smallest only just admitted a fine sound, the largest was over 1 cm. in diameter. In most cases the diameter was from 2 to 5 mm. Comparing his findings with those of other observers the author notes how widely they have differed, partly, no doubt, because of the differences in the ages of the persons examined. Those—and they are in the majority—who have included children of all ages in their studies must necessarily find a comparatively high proportion of cases, for the anatomical closure of a patent foramen ovale may occur long after birth. A patent foramen does not seem to influence growth, for the average height of the adults examined by the author was normal, and he is of the opinion that a patent foramen gives rise to no anatomical changes such as hypertrophy or dilatation of the heart. With regard to the diagnosis during life, he considers this impossible as the condition so seldom gives rise to clinical manifestations when unaccompanied by other heart lesions. The author discusses briefly the association of a patent foramen with paradoxical or crossed embolism.

FRACTURE OF THE NECK OF THE FEMUR

BY

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(WITH SPECIAL PLATE)

The treatment of fractures of the neck of the femur by the insertion of the Smith-Petersen nail is now so firmly established that attention is focused more on refinements of the technique of insertion than on comparisons with other methods. As Hey Groves has said, the Smith-Petersen nail has completely dominated the situation. There are certainly several other fractures which have more pressing claims to Kellogg Speed's title of "the unsolved fracture."

A Simplification of the Smith-Petersen Method

A year ago I published an account of a method of inserting the nail. It was not claimed that this was exactly original, but I suggested that it was probably the most simple procedure yet recorded. I have since further simplified this considerably, and I now feel that anyone with a moderate degree of operating skill—equivalent to that possessed by any competent house-surgeon—can place a Smith-Petersen nail correctly at the first attempt by this method, which has the additional advantage that it demands a minimum of team-work and instruments. It does not take long: the average duration of the operation in each of the last dozen cases has been slightly more than half an hour, and this comprises the total time spent by the patient in the theatre.

TECHNIQUE

The first step is to attach the patient's feet to the foot-pieces of an orthopaedic table by plaster-of-Paris. Reduction is performed by the Whitman manœuvre; other variations, such as those of Tavernier, Leadbetter, etc., are reserved for difficult fractures. Traction is exerted by hand only: it is difficult to assess the amount of traction which occurs when a screw-axis is used. When the necessary amount has been obtained by hand it is secured by one turn of the screw. The skin having been protected with sterile towels, four Michel clips are applied to the skin over the fracture. The first of these is placed over the middle point of a line joining the symphysis pubis and anterior superior iliac spine. The second is situated half an inch medial to this, on the line joining it and the opposite anterior superior iliac spine. The third one is placed anterior to the lateral margin of the great trochanter, approximately one and a half inches from its superior margin. The fourth is put in position midway between the first and third. A calibrated guide is then introduced directly anterior to the neck of the femur along the line of these clips until it abuts against either the head of the femur or the acetabulum. A fifth Michel clip is applied one and a half inches posterior to the point of entry of the guide.

Antero-posterior and lateral skiagrams are now taken (Plate, Figs. 1 and 2). The antero-posterior direction is ascertained from either the position of the guide or that of the clips, and the lateral direction from the position of the guide. The point of entry of the guide in the bone is determined by taking a point somewhere between the guide and the fifth Michel clip. In the last twenty cases more than 75 per cent. have been parallel to the guide or deviating only very slightly. The calibrations of the guide are counted and 0.5 cm. subtracted to allow for the fact that the guide is in front of the neck and therefore nearer the *x*-ray tube; it may also be necessary to allow for impaction. A half-inch incision is now made between the point of entry of the guide and the posterior Michel clip. The cortical bone is drilled with a quarter-inch

drill. A quarter-inch drill is essential, as by this means the direction of the guide is not interfered with by pressure on the cortical bone.

At this stage a non-calibrated guide is introduced in the direction chosen. I have discarded the use of the calibrated guide in the bone, because of the risk of impaction of the nail on a calibration. It has been suggested that the guide may bend at the site of the fracture, but this will not occur if the feet have been fixed in plaster-of-Paris. The Smith-Petersen nail is gently tapped home; it can be decided when the head is flush with the bone by using the calibrated guide. The wound is then closed with one suture.

Table of Results

Patients	Died	Non-union	Arthritis
66	7 (one after union)	4	3

Percentage of all patients with bony union	85.70
" " " " " arthritis (excluding deaths)	5.08

Time of Operation

The optimum time of operation I consider to be, as a rule, on the third day after the fracture. The patient has by then got over the initial shock, and should not yet have developed bed-sores, pneumonia, delirium tremens, etc. Pneumonia and passive congestion are indications for immediate operation. It is here that the use of the nail becomes a life-saving procedure. The elderly patient with pneumonia has a poor chance of survival if she is immobilized by an untreated fracture or plaster-of-Paris. I have been impressed by the great improvement which takes place in these patients after they have been rendered mobile in bed by the insertion of a nail. Three of the five deaths have been due to pulmonary embolus. I think it is significant that in all those cases operation was postponed, being performed between two and three weeks after the fracture. The other two deaths were due to cerebral haemorrhage and pyonephrosis, the latter unconnected with the insertion of the nail.

Lateral and Trochanteric Fractures

I have repeatedly been disappointed at the tendency to late adduction in these fractures when treated by immobilization in plaster or by the Roger Anderson well-leg traction. Adduction has taken place in some patients after five months' immobilization, even before weight-bearing had commenced, and when, on the clinical and radiological evidence, the fracture had seemed firm. Even at the best, with immobilization, one has the handicap of stiff knees to contend with, and, at the worst, adduction or external rotation deformity in addition. I therefore attempt to nail all these fractures. It may be necessary to start the nail very low on the shaft to get good bone, but this is nearly always possible. The nail need not extend right into the head of the femur. The cortical bone of the superior border of the neck affords a sufficient hold, and accidental penetration of this until union takes place is not a very serious disadvantage. I consider that an attempt to surmount the technical difficulties of the operation is well worth while. The benefit to the patient from immediate mobility leaves me with the impression that nailing is the treatment of choice.

Reduction

Reduction is usually obtained by the Whitman procedure, and it is rarely found necessary to vary this. Before the patient is placed on the orthopaedic table the hip is always flexed to disimpact the fragments. I have used the Leadbetter method of reduction, but consider its weak point is that the fractured limb is held by an assistant. If *x*-ray control is to be reliable certain factors are essential: (1) there must be no movement of the fractured limb; (2) the tube must be constantly centred over the same point. I was recently privileged to watch the insertion of a Smith-Petersen nail during which the limb was held by an assistant instead of being secured on a table. Comparison of two antero-posterior skiagrams revealed a marked discrepancy in the position of the nail, the second one showing it to be dangerously near the cortical bone of the head.

Impaction

I agree with Watson-Jones that gross impaction is unnecessary if reduction is accurate. If there is a gap between the fragments which cannot be reduced by manipulation I impact by a dozen gentle blows with the Stirling or Smith-Petersen punch. I reserve impaction for those cases in which reduction has not been perfect and a gap is left, and also in the very aged where the nail has traversed the head too easily, like a knife through butter.

After-treatment

The usual routine is to keep the patient in bed for four weeks. No precautions other than this are necessary with a well-placed nail. At the end of four weeks an *x*-ray photograph is taken, and if the nail is still in good position, possibly with signs of early union present, the patient may be allowed to sit up out of bed. At the end of eight weeks progression on crutches is permitted, but no weight-bearing until the end of three months or until bony union has occurred.

Complications

Complications are due to: (*a*) changes in position of the nail; (*b*) arthritis.

(*a*) CHANGES IN POSITION OF THE NAIL

Of sixty-six, seven have broken out, two coming out in their longitudinal axis after union. I have found that nails emerge in three ways: (1) in the longitudinal axis of the nail; (2) by an external rotation strain; and (3) by an adduction strain.

1. *In the Longitudinal Axis.*—It may be only coincidence, but I have had only one nail come out in its longitudinal axis since I have been using nails with snagged edges, whereas previously this was quite common. Whether callus forms between the teeth it is difficult to say; as against this one knows that eventually rarefaction occurs all round the nail. This resulted in one case of non-union in the last twenty-five patients. This patient was discharged as an in-patient at eight weeks, and unfortunately did not attend again for over six months. He was then found to have non-union, and the nail had withdrawn a distance of one inch. I performed a bifurcation osteotomy for non-union on the lines laid down by McMurray.

2. *External Rotation.*—I consider this is the commonest method of breaking out. It is the position taken by the fractured limb, and puts most strain on the fracture and nail. Internal rotation is a definite active movement, and though more forceful than external rotation is not as a rule adopted by the patient. It can be guarded against by applying a plaster-of-Paris T-piece to the foot or the leg.

3. *Adduction Strain.*—This occurs when a nail is placed in too perpendicular a position. If the arc described by the point of the nail can clear the lip of the acetabulum when the limb is adducted slightly, I consider the nail is in danger of breaking out by this strain. If so well placed that it will be protected by the lip of the acetabulum I

consider it to be safe. That holds also for external rotation strains, but it is difficult to determine this in a lateral photograph. The best-placed nail is that which is directly central. Any deviation from this, however, should be towards a posterior or low position. When a nail has broken out I always replace it immediately after the diagnosis has been made, and with the exception mentioned above union has always occurred.

(*b*) ARTHRITIS

My experience of the closed treatment of fracture of the neck of the femur—namely, the Whitman procedure—is not extensive enough for me to compare the incidence of arthritis with that method and the incidence with treatment by the Smith-Petersen nail. In my cases of sixty-six closed nailings there were three cases of arthritis. To these I might add twelve previous cases of open nailings; nine of these patients I have communicated with, and, apart from two pseudarthroses, they have not developed arthritis. I feel that the nail should not be blamed, and that the truth of the matter is that we are now seeing over 80 per cent. of bony unions and a much higher survival rate, and in consequence more arthritis. The arthritis is of a degenerative type, sometimes called aseptic necrosis of the head of the femur. Contributory causes to its occurrence are: (1) delayed union; (2) inaccurate reduction and, in consequence, faulty weight-bearing; (3) excessive impaction; (4) perforation of the cartilage by the guide or nail; (5) pre-existing arthritis.

Eric Lloyd has stated that the abduction fracture should not be nailed. Figs. 4 and 5 (Special Plate) show arthritis following six years after an abduction fracture with slight displacement. Whether this was due to the fracture not being reduced or to degenerative arthritis as a result of inadequate blood supply it is difficult to say, but I hold most emphatically that any fracture, abduction or otherwise, should be reduced and nailed if there is any displacement.

Summary

1. The treatment of fractures of the neck of the femur by the Smith-Petersen nail has been generally adopted.

2. A method of insertion of the Smith-Petersen nail is described.

3. It is suggested that this is the most simple method yet described, necessitating no elaborate instrumentarium, and that by its use the nail can be placed correctly in about half an hour.

4. Complications are due to breaking out of the nail or to arthritis.

In August, 1937, the signing of the National Cancer Institute Act authorized the establishment of such an Institute as part of the U.S. Public Health Service. For the necessary building and equipment 750,000 dollars were allotted and a yearly appropriation of 700,000 dollars is needed to maintain the Institute. The primary object of this Institute is to be research into all phases of cancer—diagnosis, prevention, and treatment. Knowledge gained in the Institute will be available to medical men and agencies all over the world. The appropriation also makes it possible for funds to be utilized as grants-in-aid for research. The Institute is given the power to establish and maintain research fellowships with such allowances as the Surgeon-General may consider necessary. In September, 1937, a National Advisory Cancer Council was formed under the Chairmanship of Surgeon-General Thomas Parran, consisting of Dr. James Ewing, Dr. Francis Carter Wood, Mr. C. C. Little, Sc.D., Mr. Arthur H. Compton, Ph.D., Mr. James B. Conant, LL.D., and Dr. Ludwig Hektoen.

MALIGNANT TUMOUR OF THE THYMUS GLAND

BY

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(WITH SPECIAL PLATE)

Tumours of the thymus gland are comparatively rare, and therefore the following case appears to have a definite interest.

History of the Case

A male child 5 years old was first taken to the family doctor on April 12, 1937, because he had complained of a "tight chest" during the previous two weeks. He had had measles in February, 1937, followed by a normal convalescence. His health had been good and he had always been an active child. Both parents and one brother were alive and well, and there was no history of tuberculosis in the family.

The patient was seen in consultation on April 15, 1937. He was born a "blue baby," and the parents were told at the time that there was "something wrong with his heart." A slight dry cough was present, but no expectoration. The appetite was poor and there had been much recent loss of weight. Shortness of breath and tightness of the chest were the most pronounced features.

On clinical examination the patient was obviously distressed, and there was marked cyanosis of the lips and face. He was able to stand, but could not walk a step owing to the respiratory embarrassment. He was fairly well nourished, although he had obviously lost weight recently. The temperature was 99° F. and the pulse rate 120 per minute. There was no clubbing of the fingers. Nothing definite was noted in the mouth or nasopharynx, but the superficial veins over the upper abdomen and chest were very prominent. On the right side of the neck, in the region of the right lobe of the thyroid gland, was a fluctuating swelling that appeared to transmit an expansile impulse on coughing. The heart apex beat was displaced to the left. The right chest was immobile and showed a decided fullness. There was absolute dullness on percussion and the breath sounds were tubular in character. The heart sounds were accentuated, but no definite valvular lesion was present. No abnormal physical signs were observed in the left lung apart from very harsh breath sounds. The liver dullness appeared to be increased, but nothing definite was palpated in the abdomen. Both testicles were present in the scrotal sacs. *X*-ray examination of the chest showed a dense opacity occupying the inner parts of all zones of the right lung field, and shading off towards the periphery. The diaphragm outline and costo-phrenic sulcus were obliterated. The heart and mediastinum were displaced to the left. The radiographic appearances suggested a large pleural effusion. After consideration of the clinical and radiological aspects of the case a diagnosis of mediastinal neoplasm was made.

The patient was admitted to hospital for further observation. His temperature now varied from 99° to 100.8° F., the pulse rate from 120 to 150, and the respiration rate from 30 to 50 per minute. The following investigations were carried out by Dr. A. F. Sladden, pathologist to the Swansea General Hospital.

April 20: Pleural Fluid.—The fluid was turbid, and of a brownish colour with clot. Microscopical examination revealed a few polymorphs; lymphocytes plus, and a few endothelial cells. No tubercle bacilli or other organisms were seen, and culture was sterile. Euglobulin plus; *p*H 6.9; protein, 3 grammes per cent.; albumin-globulin ratio, 2:1.

April 21: Blood Count.—Red cells 5,464,000, white cells 15,200 per c.mm.; haemoglobin 90 per cent., colour index 1.0. Average diameter of red cells, 7.1 μ.

April 23: Pleural Fluid.—The fluid contained a large amount of blood. Films showed blood cells, polymorphs, and lympho-

cytes. No tubercle bacilli or other organisms present; culture was sterile.

April 28: Blood Count.—Red cells 3,742,000, white cells 41,000 per c.mm.; haemoglobin 64 per cent.; colour index 0.82. Polymorphs, 81.0 per cent.; lymphocytes, 11.5 per cent.; monocytes, 6.5 per cent.; eosinophils, 1.0 per cent.; basophils, 0.07 per cent.; anisocytosis ±.

Further *x*-ray examinations were made on April 17, 22, and 29. These radiographs showed some slight increased translucency in the upper zone of the right lung, with what appeared to be a definite lateral border to a mediastinal mass. The child's condition gradually deteriorated. His weight decreased, the dyspnoea became more severe, and he was obviously gravely distressed. The physical signs remained unchanged. At the request of his parents he was discharged from hospital on May 7. He died a few hours after his arrival home.

Post-mortem Findings

The body was very emaciated. There was no oedema of the legs. No enlarged glands were present in the neck. A cystic swelling was seen in the region of the right lobe of the thyroid gland. On opening the thorax the right pleural cavity was filled with a brownish-coloured fluid—about three pints in all. A large growth was situated in the anterior mediastinum. No glands were palpated in the abdomen. The thoracic contents were removed *en bloc*. I am indebted to Dr. W. H. Tytler, research bacteriologist to the Welsh National Memorial Association, for the following report:

"A large, soft, relatively avascular tumour [see Special Plate] measuring 5 by 5 by 4 inches, lies in the anterior mediastinum in front of the trachea, and extends from just below the thyroid gland downwards for about 5 inches. The tumour is adherent to the upper part of the anterior parietal pericardium, and extends downwards to the apex of the pericardial sac as a broad tongue of growth about half an inch thick.

"It does not infiltrate or enclose the trachea, but the ascending limb and arch of the aorta and great vessels are surrounded and compressed but not infiltrated by it. A thin layer of growth extends downwards, infiltrating part of the posterior wall of the left auricle and ventricle, and isolated plaques of soft yellowish-white tumour tissue lie in the anterior wall of the left ventricle and at the apex of the heart, and are covered by the visceral pericardium. The cut surface of the growth presents a smooth, whitish-yellow, slightly lobulated appearance.

"*Heart:* This appears normal, apart from infiltration of its walls by the tumour as described. Small flattened thrombi lie in the left ventricle and aortic valve. The pericardium itself is nowhere infiltrated by the growth, and the sac contained no fluid.

"*Right Lung:* Normal and air-holding.

"*Left Lung:* This is compressed and practically airless. A few indefinite fibrous-like thickenings are felt over the left margin of the upper lobe, and the cut surface shows a purulent bronchitis.

"MICROSCOPICAL SECTIONS

"The tumour is composed of a diffuse undifferentiated mass of cells resembling small lymphocytes. The stroma is very scanty and there are practically no reticulum cells. The blood vessels, of which there are comparatively few, are small and thin-walled.

"*Metastases—Heart:* The areas involved show a solid mass of tumour cells on the surface and extending into the muscle to about one-half of its depth, forming columns and layers between the muscle cells.

"*Left Lung:* Sections including the thickened areas described show extensive areas of infiltration by tumour cells which involve the pleura and form dense masses round some of the blood vessels and bronchioles. There is evidence of a purulent bronchitis, with desquamation of bronchial epithelium and leucocytic infiltration, and the alveoli are largely collapsed.

"*Right Lung:* Apart from some congestion, sections show nothing noteworthy.

"INTERPRETATION OF FINDINGS

"The tumour is a malignant lymphoma, and on account of its situation possibly arises from the thymus gland. Its origin, however, cannot be stated with any degree of certainty as the thorax contains many other lymphocytic structures from which it may have arisen. The findings indicate that death was due to asphyxia and venous obstruction."

Pathology

Much is still unknown about the normal functions of the thymus gland and the part it plays in conditions of disease. The weight of the gland in relation to that of the body is greatest at birth. The maximum *actual* weight is attained at about the fifteenth year, and thereafter involution occurs—that is, at puberty, and not when the body is fully grown. This suggests an intimate relation between the thymus and the genital glands, and experimental results confirm this view. In tuberculosis the gland is very rarely affected. Small nodules and occasionally small caseous masses may be present in acute miliary tuberculosis, but neighbouring lymphatic glands may be involved by tuberculous infection without lesions occurring in the thymus.

The thymus gland is rarely the seat of either primary or secondary new growths. Voges (1926) notes that tumours of the gland were known to Virchow, who regarded it to be often the starting-point of lymphosarcoma. The commonest growth appears to be a primary malignant tumour composed of small round cells with scanty stroma. Most writers describe it as a round-celled sarcoma or lymphosarcoma, but some observers maintain that it is of epithelial origin. The carcinomata of the thymus have been the subject of much controversy, as they present many peculiar characteristics. One form of cancer may be ill-defined and resemble sarcoma, while a second variety may take the form of ordinary "medullary" carcinoma. Other observers classify the carcinomata of the thymus as small-celled and large-celled varieties, and also a form of tumour special to this gland, the lympho-epithelioma. In view of the two types of cells present in the thymus—epithelial and lymphoid—this growth may be called a true thymoma, a term which has been rather loosely applied to various forms of growth originating in the gland. Pure epithelial tumours are extremely rare. "Thymic epiblastoma" is a term used by Foot and Harrington (1923) in their description of a case.

Gandy and Piédelièvre (1920) describe a tumour resembling a lymphadenomatous growth which infiltrated neighbouring parts, including the heart and superior vena cava. It is interesting to note here that Symmers and Vance (1921) subdivide lymphosarcomata into two varieties: (1) a growth consisting of masses of lymphoid cells separated by strands of connective tissue (the usual lymphosarcoma); and (2) tumours histologically resembling Hodgkin's disease containing giant cells and eosinophil elements.

Bosanquet and Lloyd (1932) found forty-three instances of adequate records in the literature on tumours of the thymus gland. They state that twenty-nine of these were carcinomata and fourteen sarcomata, ten of the latter being lymphosarcomata. Of the carcinomatous tumours

twelve were apparently lympho-epitheliomata; thirteen were described simply as carcinomata and four as epitheliomata. Davidson (1935) quotes the recent view of Barnard that many of the tumours in the mediastinum called lymphosarcomata are in reality a form of carcinoma. The interpretation as to the character of malignant tumours seems to depend on the view held concerning the peculiar histological structure and nature of the small thymus cells, and in any case the classification of tumours according to histological structure appears to be unsatisfactory. Hassall's corpuscles may or may not be present, but their absence does not negative an origin in the thymus gland.

Metastases occur most frequently in the neighbouring lymphatic glands, in the pleura, and in the lungs. They may also arise in the abdominal glands, liver, kidneys, suprarenal bodies, stomach, ovary, and, very occasionally, in the bones.

Simple tumours such as fibroma and myxoma are said to occur in the thymus, and also cysts of varying kinds, both developmental and dermoid (Ewing, 1916).

Symptomatology

In most cases of tumour of the thymus gland dyspnoea is the predominant symptom, usually of increasing intensity and frequently paroxysmal in character. This is accompanied by cyanosis and often oedema of the neck and face due to pressure on the venous trunks, and even involvement by the growth. The pericardium and heart muscle may be infiltrated by the growth. Haemoptysis may occur owing to involvement of the bronchial vessels. Pleural effusions are a frequent accompaniment, and the fluid is usually haemorrhagic. Pneumothorax has also been met with. The case described shows several of the above features: increasing dyspnoea, inclined to be paroxysmal in character, cyanosis, haemorrhagic effusion, and pneumothorax. The heart muscle was infiltrated by the growth, and deposits were found also in the left lung and pleura. Metastases are often the cause of the most prominent symptoms—for example, abdominal symptoms—and secondary deposits occurring in the spine may give rise to a paraplegic condition before the seat of the primary lesion is recognized.

It is more usual for tumours of the thymus gland to occur in childhood. Among the cases which Bosanquet and Lloyd (1932) collected there were eighteen instances of carcinoma in persons over the age of 40 and ten below that age. The sarcomata were more evenly distributed: three occurred in the first decade of life, two in the second, three between 21 and 30 years of age, and three between 31 and 40, the remaining two being in persons aged 60. Bedford (1930) describes a carcinomatous growth of the thymus in a newborn child. Death was caused by asphyxia, and metastases were present in the lung, liver, bones, and skin.

Several authors discuss the association of thymic tumours with other diseases—namely, lymphosarcoma associated with lymphatic leukaemia, and thymic tumours occurring in patients suffering from myasthenia gravis—most of which are regarded as having been benign in character, although originally reported as otherwise by the authors. Two cases have been described in which thymic tumour was present in patients with tuberculosis. Ewing (1916) reports a case in which repeated attacks of tonsillitis occurred. In view of the close resemblance in histological structure between the tonsil and the thymus the association of these symptoms is worthy of note.

Diagnosis

It is extremely difficult, and often impossible, to make an absolute diagnosis of thymic tumour during life. In most cases dullness on percussion over the upper part of the sternum, dyspnoea, venous engorgement, and the radiographic appearances will help in arriving at a tentative diagnosis of the condition. Unfortunately one or more of these symptoms and signs are frequently absent, and the radiograph may not show the shadow of an enlarged thymus, as instanced in our own case. Screening examination shows that the opacity increases in size when the child cries.

The diagnosis from tuberculous enlargement of the superior mediastinal glands rests upon the characteristics noted above. An intradermal Mantoux test would also prove helpful in the differentiation. In our own case the radiological diagnosis of a thymic tumour was rendered difficult by the appearances of a massive effusion in the right pleural cavity, although later films showed an atypical but defined edge in the upper mediastinal area of the radiograph, suggesting the possibility of a mediastinal tumour. Unfortunately the child was so ill that it was deemed inadvisable to prolong the examination for screening and lateral radiographs to be taken.

Treatment

Apart from symptomatic and palliative measures the treatment of these cases is very unsatisfactory. A case is recorded by Lenz (1928) in which an epithelial tumour of the thymus was successfully removed by operation and the patient recovered. Owing to the involvement of the great vessels in these tumours in the majority of cases it would appear that surgical methods are extremely limited. In our own case surgical removal of the tumour would obviously have been impossible. American workers report success in treating mediastinal lymphoblastomata with deep *x* rays: but although improvement occurs this is probably only transient. The thymus, like lymphoid tissue generally, is very sensitive to the action of *x* rays; degenerative changes are produced in the lymphocytes, which may become destroyed. In early life the thymus has great powers of regeneration, as is seen when a part is removed. Davidson (1935) records a case similar to the one here described, in a child of 5 years. Urgent dyspnoea was the main symptom, and a blood-stained effusion was present. A considerable improvement was brought about for a time following deep *x*-ray therapy, but subsequently the patient died, ten weeks after admission to hospital. The growth in this case was classed as a sarcoma, and sections showed it to be composed of small round cells of the lymphoid type in a fibrous reticulum.

Prognosis

In the case reported by Bosanquet and Lloyd (1932) the disease seems to have been present for several years bfore the patient eventually died. Kneringer and Priesel (1923) describe the case of a man aged 71 in whom the disease had apparently lasted for over eight years; while Miller (1926) records a case in a child of 9 years who died in twenty-six days. In the present case the patient died within thirty-nine days after the onset of symptoms. A duration of two years is not rare, but the majority of patients die within a year of the onset of symptoms.

Summary

1. A case of malignant tumour of the thymus gland has been described. It presented many typical features

from the clinical standpoint, but the radiological appearances were not diagnostic.

2. The tumour infiltrated the heart muscle and the left lung and pleura, but the pericardium was free from involvement. The arch of the aorta and great vessels were surrounded by the tumour, but not infiltrated.

3. The origin of the tumour cannot be stated with any degree of certainty, but it appears to be a primary growth in the thymus gland itself.

4. The microscopical findings show the tumour to be composed of a diffuse undifferentiated mass of cells resembling small lymphocytes. It is not a true "thymoma" in the strictest pathological sense, but more correctly a malignant lymphoma.

5. Post-mortem findings indicate that death was due to asphyxia and venous obstruction.

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SPONTANEOUS HAEMOPNEUMOTHORAX

BY

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(WITH SPECIAL PLATE)

Although a spontaneous pneumothorax is by no means an uncommon event, it is comparatively rarely that the condition proves to be serious. In most cases the collapse of the lung results from the rupture of an innocent cyst or bulla into the pleura, and the air is gradually absorbed from the pleural cavity. Occasionally a valvular opening may occur, with the result that there is a mounting pressure in the pleura and serious interference with respiration; at other times, especially when there is active tuberculosis in the lung, there may be pleural effusion or even pyopneumothorax. Severe haemorrhage in cases of spontaneous pneumothorax is rare enough to justify the publication of the notes of the following case.

Case Record

X. Y., a man aged 24, had always enjoyed good health. On August 28, 1937, he was unscrewing the caps from heavy hydrogen cylinders; this involved considerable strain on the muscles of the chest and arms. He felt no ill effects at the time, but was awakened at 5 o'clock the following morning by a severe pain in the left side of the chest. He got up at his usual time and felt quite well, except that any strain or sudden movement produced a stitch-like feeling in the left side of the chest and some shortness of breath. At that time he "felt as if there was some fluid jumping up and down" on sudden movement. He was reasonably active during the day, but was short of breath on attempting to play tennis. The following day he became still more short of breath, and felt severe and increasing pain in the left side of the chest. He returned home early and went to bed; the dyspnoea and pain were much relieved by rest. On the same night he felt very faint, and his doctor noticed that he appeared to be blanched, exactly as if he had had a severe internal haemorrhage. Physical examination of the chest revealed that there were no breath sounds on the left side, and a radiograph was taken (Fig. 1) which showed a pneumothorax and a considerable quantity of fluid. The patient was seen on September 3, when, in view of his extreme pallor, it was suspected that there had been bleeding into the left pleural cavity. The chest was explored with a needle and blood was found. He was admitted to the St. David's Wing of the Royal Northern Hospital, and on September 9 34 oz. of liquid blood were removed from the left pleura, using a wide-bore needle and a rotanda syringe. No difficulty was experienced and the general condition of the patient was good, but it was decided not to attempt to remove more blood at that time because it was impossible to be sure that further bleeding would not take place. The chest was screened on the following day, and it was then seen that a considerable amount of fluid was still present. On September 12 it was decided to empty the chest as far as practicable, and a further 30 oz. of blood was removed. The breath sounds were found to have returned over the lower lobe and the percussion note became resonant. The patient was kept in bed for a week and given an iron tonic. His general condition rapidly improved and the chest condition remained satisfactory. He was seen again on September 29, when he appeared to have recovered his health, and an *x*-ray film (Fig. 2) showed complete re-expansion of what appeared to be a normal lung.

Discussion

The occurrence of a haemopneumothorax raises several points of importance. In the first place it is almost impossible to imagine it happening in a case of spontaneous pneumothorax unless there had been some previous abnormality in the pleural cavity or some lesion in the underlying lung. In this particular case there was no clinical or radiological evidence of pulmonary tuberculosis, and it seems almost certain that the bleeding must have been caused by the rupture of an adhesion between the two layers of the pleura. It would be possible in this way for a small vein to be opened and for a gradual haemorrhage to result. That the bleeding was gradual is shown by the fact that blanching was not noticed until at least forty-eight hours after the pneumothorax must have occurred.

It is clear that in such cases the blood must be removed as completely as possible from the pleural cavity, but choice of the appropriate time may be difficult. If the intrapleural pressures are interfered with before the bleeding point is sealed off a fresh haemorrhage may be caused, whereas, if left for too long, organization of the blood-clot is likely to commence and permanent damage may result. It would appear that an interval of about a week is desirable before the blood is removed. It is interesting to note that in this case the blood seemed to be entirely liquid and there was no evidence of the presence of a mass of fibrin; it was possible to empty the pleural cavity so completely that the film taken three weeks later did not show any trace of residual blood or of pleural thickening.

A recent French Government decree brings into existence the Order of Public Health, which is to be awarded to persons who have distinguished themselves in the promotion of health and infant welfare. Of the three grades within this Order the highest is that of Commandeur. The next is that of Officier, and the third is that of Chevalier. The decree specifies the conditions under which this honour is to be awarded. It is to replace the honorary medals hitherto conferred on persons distinguished in the field of public health.

EXTRA-UTERINE GESTATION: LIVE CHILD

BY

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(WITH SPECIAL PLATE)

Sittner in 1906 collected all the records from the year 1809 of extra-uterine foetuses which showed any signs of life, and later Hellman and Simon (1935) brought these up to date. In the 126 years 266 such records were tabulated. Hellman and Simon's tables include many cases where the child was not viable, and I have rejected these cases. Of the 266 women, 179 recovered, eighty-four died, and of three the fate is unknown. Of the 266 babies, 152 lived for eight days or more, 113 died within this period, and of one the fate is unknown. According to Hellman and Simon's abstract, in only eighty cases did mother and child survive, but I find that this figure should be 110. Probably the authors rejected some cases where the child died later, but as all of them will eventually die I have adhered to the standard of survival for eight days. Twenty-eight of the 266 babies are recorded as being deformed to some extent, and of these sixteen lived eight days or more. These figures are probably valueless as evidence of the likelihood of survival, for there is a greater tendency to record successful cases than unsuccessful ones.

Since Hellman and Simon's publication Zarfl (1935), Krishnan (1936), Füth (1936), Wilson (1936), Woods (1936), and Anderson (1936) have reported cases. It seems to be well established that if the removal of the secundines is difficult or dangerous they may safely be left inside the abdomen, even to the whole placenta and membranes. In the case here recorded removal of the placenta was fairly easy, but a great deal of the membranes was left without any harm resulting. Marsupialization with its subsequent sepsis is unnecessary. I have known of a twin placenta which disappeared from the peritoneal cavity in a period of nine months.

Case History

A woman aged 25 was referred by Dr. A. C. H. McCullagh of Bishop Auckland on September 14, 1937, on account of persistent transverse lie. She was an unmarried primigravida, and gave a history of amenorrhoea since January 6, which suggested term about October 13. On May 8 she had pain in the left lower abdomen, which kept her in bed for a week. She returned to work on May 15, but on May 20 had a sudden intense pain and was in bed for a further fortnight. Movements were felt for the first time at the end of May, and since then they had caused her pain, which increased in severity as pregnancy advanced. Vomiting began at this period, later becoming worse.

On admission she was wasted and very ill, having a temperature of 97.4° F. and a pulse rate of 124. The urine was loaded with acetone, but contained no other abnormal constituent. There was pain of a colicky nature in various parts of the abdomen, severe enough to make her roll about the bed and shout, and there were intervals of vomiting. Examination showed the foetus to be lying transversely with the head in the right lumbar region. The foetal parts and movements were unduly easily palpable, whilst in the left iliac region was a smooth rounded mass the size of a five-months pregnancy. There was considerable hydramnios. Contractions could not be felt over the foetus or over the smooth mass. Per vaginam a fluctuant bulging of the posterior fornix was palpated, and the cervix appeared to be connected with the mass (though later this was revealed as the placenta, not the uterus). Dr. D. Ramage took radiographs, which showed a normal foetus with, in addition, a clearly marked oval mottled shadow—half the size of the foetal head—in front and to the right of the first lumbar vertebra (Special Plate, Figs. 1 and 2). This shadow was unexplained even at operation, but a post-operative radiograph showed it in the rectum, and I later received confirmation from her own doctor, Dr. V. H. Wardle of Bishop Auckland, that she had been receiving a bismuth mixture. The radiograph was taken three days after any bismuth had been given. In the four days before operation her bowels were moved only by enemata, and there was considerable gaseous distension of the abdomen. The day after operation her bowels moved repeatedly and the vomiting ceased. A pre-operative diagnosis of thirty-seven weeks' extra-uterine gestation with hydramnios and intestinal obstruction was made.

On the day of operation she was so ill (pulse rate 150) that general anaesthesia was deemed inadvisable, and at 2.10 p.m. on September 18 she was given morphine sulphate 1/4 grain and hyoscine hydrobromide 1/100 grain hypodermically. At 2.40 p.m. a large Spencer Wells forceps was passed through the cervix for three inches, confirming the opinion that there was not an intra-uterine gestation. With 1 per cent. procaine infiltration anaesthesia, a midline subumbilical incision was made. The upper two inches of the incision revealed thick "wash-leather" yellowish-grey amnion, and the incision was rapidly extended a further two inches above the umbilicus. On opening the membranes a large quantity of liquor, estimated at six to eight pints, escaped. The child was extracted as a breech and breathed immediately. It was a female, weighing 5 lb. 4 oz., and showed some lateral flexion of its body and a mild right-sided calcaneo-valgus. Both these were of a temporary nature and disappeared in forty-eight hours; they would have passed unnoticed in a normal delivery. The membranes were adherent above to the distended small and large intestines and to the omentum, but there was no evidence of a false sac: where it was possible to strip off the membranes the naked adjacent structure was left beneath. In front the membranes lay against the anterior abdominal wall, and below they covered the bladder and filled the pouch of Douglas, leaving the placenta projecting up into the sac. By separating some omentum, access was gained to the general peritoneal cavity, and it was found that the placenta was attached solely to the left broad ligament, ovary, and tube close to the uterine cornu. The outer half of the left Fallopian tube was outside the sac and appeared normal. The uterus was surprisingly small, being equivalent to a two-months pregnancy. Removal of the placenta, which showed a haematoma the size of an egg close to the cord on the foetal aspect, was not difficult, and needed but three clips: one clamped the ovarian vessels, one the round ligament, and one the ovarian ligament and uterine cornu. There was not much loss of blood. A little nitrous oxide and oxygen was administered during the clamping of the pedicles. About half of the membranes was removed by stripping, but it was found that this caused some capillary oozing, so the part remaining on the bladder, bowel, pouch of Douglas, omentum, and anterior abdominal wall was left *in situ* and the abdomen closed without drainage. At the end of the operation the general condition was quite good, though the pulse rate was 170. The patient was returned to bed and a pint of 5 per cent. glucose in normal saline was slowly introduced intravenously.

On the following day there was a considerable degree of ileus. Five units of posterior pituitary extract with 1/100 grain of eserine sulphate were given hypodermically, followed by a further five units after half an hour. Her bowels moved at least eight times, and from then on she made a rapid recovery, only delayed by the breaking down of a small area of the wound which required three stitches. The temperature was never above normal, and by the fourteenth day the pulse rate was 80. She left hospital five weeks after operation in good condition. The baby was fed artificially, and after thriving for a while developed an enteritis. It was transferred to the Newcastle Babies' Hospital under the care of

Dr. J. C. Spence. The mother later took charge of the baby, and when it was four months old wrote to say that it was thriving and gaining weight.

I have to thank the various medical men named for their co-operation, and Drs. J. F. Fraser and W. F. Hall for assistance at the operation.

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Clinical Memoranda

Complications of Gold Therapy

(WITH SPECIAL PLATE)

The following case showing complications of gold therapy may be of interest in view of the widespread and protean nature of the lesions. Among twenty-six cases given thirty-four courses this was the only one which showed a severe reaction, other complications being three of albuminuria and two of very localized dermatitis.

CASE REPORT

A fitter aged 31 had a septic finger with suppurating axillary glands in October, 1935. Five weeks later he began to have vague pains in his heels and subsequently in his knees, shoulders, wrists, and fingers. There was no history of rheumatic or scarlet fever in childhood. On admission to the Newcastle Royal Victoria Infirmary under Dr. George Hall on January 11, 1936, his temperature was 100.6° F. and his pulse 106; the affected joints were swollen and somewhat red. The gonococcal complement-fixation test was negative and a diagnosis of rheumatic fever was made. Treatment with salicylates was begun, and forty-eight hours after admission the pulse and temperature were normal. He was in hospital for seven weeks, and on discharge continued radiant heat and diathermy, which he had had during the latter part of this time. Persistence of the pain in the heels led to *x*-raying of that region, but with a negative result. When first seen by me in May, 1937, he still complained bitterly of pain in the heels, and to a less extent in the small joints of the hands. There was some tenderness on pressure over the heels and slight swelling of the finger-joints, but no heat or redness. Examination of the throat, teeth, sinuses, and urine revealed no evidence of a septic focus, and in view of the considerable discomfort the patient was suffering and the fact that he was very anxious to be restored to normal health before being married, it was decided to begin treatment with lopion. A course as recommended by Hartfall and Garland (one 0.01 gramme dose, one of 0.025 gramme, one of 0.05 gramme, and nine 0.1 gramme doses) was given, and he remained well throughout. Pain began to improve about the middle of the course and disappeared before the end. His urine was free from albumin throughout. The patient was instructed to return in three months, when widespread lesions were observed to be present. He then stated that two weeks after the termination of treatment his mouth became sore; later his neck became dry (Plate, Fig. 1), and his hair began to fall out two months later. His feet then peeled and nail changes were first noticed one week before his return.

On examination his general condition was good. The scalp showed a diffuse thinning, the patient having previously had a good head of hair. There was a diffuse dryness of the skin, with patchy purple lesions on the arms and heels like pityriasis rubra; the trunk showed a fine scaling, and the face a good deal of erythema with some scaling. The palate was the site of small superficial ulcers, and on the buccal surfaces of the cheeks were sodden lesions not unlike lichen planus in that situation. The nails were in process of being cast, and the growth of new nails was apparent, the photograph reproduced on the plate (Fig. 2) being taken some days later. Blood examination gave the following result: red cells, 5.05 millions; haemoglobin, 86 per cent.; leucocytes, 15,000; reticulocytes, 0.4 per cent.; platelets, 280,000. The capillary resistance test was negative after fifteen minutes' pressure at 75 mm. Hg.

When seen in January, 1938, the skin was much improved and the nails were growing again, but there was no improvement in the scalp. The patient remained free from pain in the heels or joints, and was well in his general health.

Since writing the above note I have again seen the patient. He attended on March 28, and I now find that the skin and nail lesions have completely cleared up and the hair is almost restored to normal.

I am indebted to Dr. George Hall for permission to publish this case.

T. H. BOON, M.D., M.R.C.P.,
Medical Registrar, Royal Victoria Infirmary.
Newcastle-upon-Tyne.

Bilateral Axillary Breasts

(WITH SPECIAL PLATE)

The photographs of an unusual case—that of a woman with a pair of axillary breasts—may be considered interesting enough to be reproduced here (see Special Plate).

The patient is a young woman, lactating, with her second baby, aged 2 weeks. Had the photographs been taken some ten days earlier the breasts, which were engorged, would have been seen to be larger still. Each breast is entirely separate from the normal pectoral breast below, and is provided with a small nipple, from which milk runs down the arm during suckling. The arrows point towards these nipples. It is not unusual to see a vestigial breast or nipple on the pectoral line below the normal breast; but I believe a complete breast, with nipple, functioning in each armpit must be very rare.

MOLLIE CHRISTIE, M.B., Ch.B.
Wanganui, N.Z.

Ether Convulsions with Recovery

The occurrence of ether convulsions has aroused considerable interest recently, and although more and more cases of recovery after different methods of treatment are being reported I feel that one further case is worth putting on record.

CASE REPORT

A male patient, aged 17, was admitted to the Western Infirmary, Glasgow, on December 16, 1937. His history, symptoms, and signs were typical of acute appendicitis, the attack having begun twenty-four hours previously. At operation the appendix was gangrenous and had ruptured close to the wall of the caecum, pus and free fluid being found in the abdominal cavity. The appendix was removed and the abdomen drained. It was noted that the proximal part of the ascending colon, the caecum, and terminal ileum were injected and showed some small petechial haemorrhages. The administration of the anaesthetic—ethyl chloride followed by open ether—was uneventful. After the operation the patient vomited at intervals during the next five days, his temperature ranging from 98° F. to 101° F. and his pulse rate from 90 to 110 a minute; the respiration rate was 24 a minute. It was decided to operate again on December 22, 1937, and the abdomen was opened with a right paramedian incision. At this time the boy was very ill and very toxic; his colour was poor, his temperature 99° F., his pulse 96, and his respirations 24 a minute. Anaesthesia was induced with ethyl chloride and continued with open ether; oxygen was flowing gently under the mask. The small bowel above the caecum was atonic and distended for a

considerable distance. An enterostomy tube was inserted just above the paralytic part of the bowel.

As closure of the abdomen was begun the house-surgeon, who was administering the anaesthetic, called me over and drew my attention to twitching of the neck muscles. The mask was removed and the facial muscles were found to be twitching violently. The anaesthetic was discontinued and oxygen and carbon dioxide were administered. I prepared a solution of evipan sodium (10 per cent.), and by the time this was ready vigorous convulsions had spread to the shoulder-girdle and to both arms. They had begun also in the body and lower limbs but less violently, though they were sufficiently severe to render closure of the abdomen more or less impossible. One arm was sufficiently controlled to allow of an intravenous injection of 3½ c.cm. of evipan sodium being given; this was just the amount required to control the convulsive movements. The pulse at this time was very poor and the colour pale. Within a minute the pulse improved and with it the boy's colour. Closure of the abdomen was completed without further trouble or incident, and no more evipan was required. Cold wet towels were also applied to the head, and as a final measure 10 c.cm. of calcium gluconate were given intravenously.

The patient was returned to bed in fair condition, and there were no further convulsive movements. His temperature was taken immediately he returned to the ward and was found to be 103° F. It rose in an hour to 104° F., and was charted hourly for the next eight hours, the readings being 103.8°, 100°, 101.8°, 102.6°, 103°, 102°, 102.4°, and 102° F. Two hours later it was 99° F., and although it rose later that day to 101.2° F. further progress was at a more or less normal level.

COMMENTARY

The abdominal condition naturally caused some anxiety for a few days, but the recovery from the anaesthetic was uneventful except for one curious complaint. The boy noticed on the morning following the operation that pulling his hair over the left occipito-temporal region caused no sensation whatsoever, a phenomenon which rapidly passed off and probably bears no relation to his ether convulsion. He has now made an excellent and complete recovery. I think it is fair to diagnose this as a case of true ether convulsions. The type of patient and his toxic condition, the sudden onset late in the operation, the convulsions beginning typically in the face and neck muscles and spreading to the rest of the body, and the rapid rise in body temperature make up the usual clinical picture. Chadwick reported a case of recovery after the use of evipan in the *Journal* (1936, **1**, 1253), and I have no doubt there have been other recoveries following this treatment since then. Bamford reports five cases recovering after compression of both common carotids simultaneously for five seconds, with raising of the head of the patient and lowering of the feet. Cessation of the convulsions has also been reported after the intravenous injection of calcium gluconate (A. S. Hoseason, *Brit. J. Anaes.*, 1936, **13**, 142). Had I known that calcium gluconate was immediately available on this occasion I would have injected it while the evipan was being prepared instead of afterwards, when the convulsions were under control. Confirmation (in another case) of the above result would have been very interesting, and would have lent further support to the theory that the condition is due to neuromuscular irritability following diminution of the physiologically active fraction of the serum calcium.

For permission to publish a record of this case I am indebted to Mr. M. Logan Taylor, to whose wards the case was admitted, and to Mr. R. S. Kerr and Mr. A. I. L. Maitland, who performed the two operations.

HERBERT H. PINKERTON, M.B., Ch.B.,
Anaesthetist, Western Infirmary.

Glasgow.

Reviews

THE THYROID AND ITS DISEASES

The Thyroid and Its Diseases. By J. H. Means, M.D. (Pp. 602. 25s. net.) Philadelphia and London: J. B. Lippincott Company. 1937.

Although Magnus-Levy demonstrated in 1895 the role of the thyroid in gas exchange, it was not till twenty years later that the determination of basal metabolic rate emerged as a means of measuring quantitatively the level of thyroid function. Metabolic rate estimations were begun at the Massachusetts General Hospital in 1913, and round the metabolism laboratory as headquarters the Thyroid Clinic has developed. Since the war much clinical and research work has been carried out; and with the object of defining the present state of knowledge of the subject Professor Means has been led to write a book on *The Thyroid and Its Diseases*. He has marshalled the facts in a masterly manner, and deals open-mindedly and judicially with controversial matter. The first hundred pages are taken up with a discussion of the anatomy, physiology, and pathology of the gland, and the general symptomatology of its diseases. The nature and degree of the morbid process are assessed through observing signs and symptoms and through measuring bodily functions. Of these the determination of the metabolic rate is of special importance. Some of the newer lines of study—creatin tolerance, iodine and thyroxine content of the blood, thyrotropic hormone content of blood and urine, and electrical impedance—may further extend our knowledge. Professor Means and his colleagues have not found much gain from study of the electrical impedance. Viewed broadly the pathology of the thyroid separates itself into a group of morbid processes which may afflict the thyroid much as they do any other organ or tissue—congestion, inflammation, and new growth—and a group of morbid processes which are peculiar to the thyroid and have their being in its special structure and function. The latter resolves itself, on the functional side, into states of increased or decreased secretory activity; and, on the structural side, into hyperplasia on the one hand and hypoplasia, destruction, ablation, and atrophy on the other.

In the absence of known aetiology of many of the thyroid disorders classification is unsatisfactory, but some sort of classification is necessary to facilitate the study of cases and clarify the indications for treatment. The so-called simple goitre is a well-recognized entity due to iodine deficiency; where the clinical picture is dependent upon an insufficient production of hormone hypothyroid states occur; and Professor Means prefers the term toxic goitre to cover all those states of hyperthyroidism, comprising thyrotoxicosis, exophthalmic goitre, Parry's, Graves's, and Basedow's disease. He believes that there is no reason to differentiate two sorts of toxic goitre—exophthalmic, and Plummer's toxic adenoma—pointing out that the type of toxic goitre does not determine the iodine response, which in all thyrotoxic patients is essentially the same. The similarity of response is an argument in favour of the essential unity of toxic goitre as a class. The author deals with simple goitre, and the hypothyroid states—myxoedema, juvenile myxoedema, and cretinism—on orthodox and satisfactory lines, especially urging the distinction between juvenile myxoedema, a

disease acquired during childhood, and true cretinism, which is congenital; for the prognosis and factors governing successful treatment are different. There is, too, a distinction to be made between endemic and sporadic cretinism. In the case of cretinism it is pointed out that the success of treatment depends upon the time of life at which it is begun and the adequacy with which it is maintained. Especially in the sporadic cases should the attending physician be alert to detect it early and carry out treatment promptly and persistently.

The iodine response in toxic goitre is one of its characteristic features. An amelioration of all symptoms usually begins in a few hours, and the metabolic response runs parallel; its magnitude and rate can be predicted with fair accuracy. It takes about ten days to reach its completion—that is, to get the patient fully iodinized. Anatomically there is diminished congestion of the gland and involution occurs; there is increased storage of colloid and the epithelium returns to a state resembling the resting. Apparently iodine obstructs the delivery of hormone from the thyroid, but the morbid stimulus to the gland continues to work. The minimum dose of iodine which will produce the full characteristic response is about six milligrammes a day. Larger doses are usually given, as there is no objection and the risk of underdosage is eliminated. Iodine administration is a necessary part of preparation of the thyrotoxic patient for operation. In no toxic case should an operation be done until the patient is fully under the influence of iodine. Iodine is very effective in the control of the milder forms of thyrotoxicosis residual to, or persistent after, operation. Indeed, in specially selected cases it may be enough to use iodine as a treatment by itself. Such cases are a very small proportion of the total, and in Professor Means's series over the years 1932–5 inclusive amounted to but 1.3 per cent. of the whole. *X* rays are an effective form of treatment in some cases, but subtotal thyroidectomy in the fully iodinized patient is at the moment the best treatment that can be offered. It gives a better chance of prompt and permanent cure than any other therapy now available. In cases coming to operation the importance of adequate preparation, careful anaesthesia, and team-work among the surgeons is emphasized. There is much to be said for preferring the slow, careful, bloodless technique which preserves the parathyroids and nerves by exposing and avoiding them. There are various complications of toxic goitre—cardiac insufficiency, the so-called toxic storms, psychoses, and glycosuria—which crop up in large series of cases in sufficient numbers to allow of generalization. The whole class of nodular, adenomatous goitres is in an entirely different category; their treatment is guided by the presence of thyrotoxicosis, of tracheal compression with pressure symptoms, or of any features suggesting malignancy. Malignant goitre is not rare, and can be cured only by early treatment.

The remaining chapters of this most interesting and instructive book deal with anomalies of the thyroid, thyroid administration in diseases other than those of thyroid origin, and the possibility of affecting the course of other diseases by total thyroidectomy. Readers will find Professor Means's book a mine of information, compiled with judgment and offering a statement of our knowledge which conforms with the most advanced thought of present-day medicine. The author is to be congratulated on the open-mindedness of his conclusions, and he would be the first to acknowledge, indeed to expect, that many of them will be modified as the result of further work.

PLANT VIRUS DISEASES

A Textbook of Plant Virus Diseases. By Kenneth M. Smith, D.Sc.Manch., Ph.D.Camb. (Pp. 615; frontispiece, 101 illustrations. 21s.) London: J. and A. Churchill, Ltd. 1937.

Dr. Kenneth Smith has produced another book on plant viruses, and this one, as its title implies, is concerned with the diseases which these agents produce. Naturally it is not a book which will appeal to the general medical public; it is not intended for them, but for the plant pathologist. And for the same reason it is quite impossible for anyone not possessed of a knowledge of plant diseases to review such a book critically. All that can be done is to give some idea of its scope and to take the facts on trust, seeking comfort in the thought that the author's eminence in this branch of plant pathology is ample guarantee of the book's factual content. One gathers from the preface that Dr. Smith was at some pains to arrive at a satisfactory method of classifying these plant viruses. Eventually he decided on the plan of naming them after the host plant most commonly affected—using the Latin and not the popular name—and numbering the different viruses attacking the same host. Thus tobacco mosaic virus becomes *Nicotiana virus 1*, speckled tobacco mosaic *Nicotiana virus 2*, and so on. This method appears to work quite well, and arranged in this way the various plant viruses and the diseases they produce are described according to a common plan. The first part of each section is devoted to a consideration of the characters of the virus, its mode of transmission and its host range, while the second part is concerned with the diseases caused by the virus and such important questions as the geographical distribution of these diseases and their control. Chapter VIII is concerned with the insects responsible for the transmission of these virus diseases, and it constitutes a very valuable portion of the book. The last chapter contains brief references to plant diseases suspected of being of virus origin, and the book closes with an appendix in which the most characteristic symptoms of the various diseases on their more important host plants are given in tabular form.

The book is well printed, contains numerous illustrations, and has both a subject and an authors index. In addition a list of references is appended to each chapter which cannot fail to be of value.

PHYSIOLOGY

Physiology in Modern Medicine. By J. J. R. Macleod. Eighth edition. Edited by Philip Bard. (Pp. 1,051; 355 figures; 103 tables. 36s. net.) London: Henry Kimpton. 1938.

The seventh edition of the late Professor J. J. R. Macleod's *Physiology in Modern Medicine* appeared in 1935 shortly before his untimely death. That an eighth edition should have been called for so soon is in itself a testimonial to its usefulness in the past, but with the author's decease his book has suffered a change. Professor Bard, the new editor, indeed states that "little of the seventh edition remains. The greater part of the book has been entirely rewritten," and that by nine individuals. With the great growth of physiology this may be inevitable but nevertheless regrettable. Even in the last edition of Michael Foster's *Textbook of Physiology* much preparatory work was done by others, but the whole bore the imprint of his mind, as unmistakable as the brush-work of an old master. This is hardly possible to-day. But this book

has undergone a further change; its original purpose was "to serve as a guide to the clinical application of physiology and biochemistry." The present edition makes no pretence of being a textbook of applied physiology. Nevertheless the title is retained because in the editor's opinion "the greatest service which physiology can render modern medicine is to continue to solve fundamental problems which are not necessarily of immediate practical concern." The original *raison d'être* of the book therefore seems to have vanished, and it must compete with other textbooks of general physiology. Judged by that standard it appears to be a thoroughly competent piece of work, while leaving room for another to fulfil the author's original purpose.

X-RAY EXAMINATION OF THE LARYNX

Methodik der Röntgenuntersuchung des Kehlkopfes. By Dr. Richard Waldapfel. (Pp. 91; 77 figures. RM. 17.60; bound, RM. 19.60). Leipzig: Georg Thieme. 1938.

Dr. Waldapfel thinks that the majority of laryngologists have not appreciated the work of Thost upon the examination of the larynx with Roentgen rays, partly because they believe this is unnecessary and partly because of the indifferent results. He is convinced of its value in the diagnosis of gross disease of the larynx, both in demonstrating the nature of the morbid process in such conditions as perichondritis and tuberculosis, and also in delineating the precise extent of tumours. His work is magnificently illustrated with diagrams and reproductions of radiographic films, and is a convincing proof of the diagnostic value of the method. To those anxious to acquire the technique and to those interested in the interpretation of the results this book can be recommended without hesitation.

BIOLOGICAL WORKS OF ARISTOTLE

Parts of Animals, Movement of Animals, Progression of Animals. By Aristotle. Translated by A. L. Peck, M.A., Ph.D., and E. S. Forster, M.A. With a Foreword by F. H. A. Marshall, C.B.E., Sc.D., F.R.S. (Pp. 556. Cloth, 10s. net; leather, 12s. 6d. net. America: Cloth, 2.50 dollars; leather, 3.50 dollars.) London: William Heinemann Ltd.; Cambridge, Massachusetts: Harvard University Press. 1937.

This is the fifteenth volume of the works of Aristotle published in the Loeb Classical Library, and there is still the *De Coelo* to come. It is clear therefore that the great master is still read, although Greek is no longer compulsory. The present volume contains the biological treatises the *De Partibus*, the *De Incessu*, and the *De Motu Animalium*—treatises which have always appealed to the most cultured minds in the medical profession, for they deal with biology, with anatomy, and with physiology. How and where Aristotle got his immense knowledge is not known. Whales are not common in the Mediterranean, yet he recognized that they were not fish but were "in a way land animals and water animals: they inhale the air like land animals, but they have no feet and they get their food from the water as water animals do." The gall-bladder, too, interested him, and he knew the creatures which possess gall-bladders and those in which they are wanting, though his reason for the presence or absence no longer holds good. The essay on the parts of animals is introduced by Dr. F. H. A. Marshall, F.R.S., Reader in Agricultural Physiology. Dr. A. L. Peck, University Lecturer in Classics at Cambridge, provides an excellent translation, in which he acknowledges his indebtedness to the scholarly version made some years ago by Dr. William Ogle. Mr. E. S. Forster, Professor of Greek in the University of Sheffield, translates "The Movement of Animals" and "The Progression of Animals." There is an excellent introduction and an index which is good when one has learnt how to use it. A reperusal of the treatises enables the reader to understand why they fascinated such minds as the wizard Michael Scot; Robert Grosseteste, the greatest of the Bishops of Lincoln; and Dr. William Harvey, who, in his *De Generatione*, continued Aristotle's work on embryology.

Notes on Books

The Management of Early Infancy, Puberty and Adolescence (C. W. Daniel Company, Ltd., 2s. 6d.) is one of the pamphlets issued by the Medical Society of Individual Psychology. Dr. Joyce Partridge deals with the management of early infancy, Dr. H. Crichton-Miller with puberty and adolescence, Dr. T. A. Ross with the psychological approach, and the late Dr. Crookshank with the neurotic character—a lecture which has been put in to take the place of one of the series on child psychology which was not available. These papers are popular and sufficiently interesting, but with nothing very original about them except perhaps Dr. Crichton-Miller's observation that boys and girls approach puberty with different outlooks, so that the former are prone to anxiety states and the latter to hysteria.

The little work entitled *The Healthy Heart and the Diseased Heart* (Rome: Istituto Nazionale delle Assicurazione, 5 lire) is, as its subtitle—"A Doctor's Advice"—suggests, a popular work, which was intended primarily for the members of the Italian Insurance Institute, instructing them how to collaborate with the doctor in the prevention and treatment of heart disease. Sound advice is given as regards diet, rest, occupation, tobacco, alcohol, climate, sport, travel, housing, personal hygiene, sleep, marriage, choice of profession, and recreations.

Mothercraft, Antenatal and Postnatal (J. and A. Churchill, 10s. 6d.) has been prepared for a second edition by Dr. REGINALD C. JEWESBURY, and if the sections on bottle-feeding be excepted (because of their rigid insistence on percentage feeding) it can be highly recommended for practitioners as a guide to the management of infants. The section on the premature baby is particularly good.

Professor ALBRECHT PEIFER'S original contributions on the premature baby are well known, and it is therefore a great pleasure to welcome his monograph on immaturity and debility (*Unreife und Lebensschwäche*, Leipzig, Georg Thieme, RM. 6.80). This summarizes recent work, more especially of his compatriots, on small and premature infants and within brief compass gives an excellent presentation of the subject.

Bienengift als Heilmittel, by Dr. ROBERT SCHWAB (Leipzig, Georg Thieme, RM. 2.40), is a monograph on the treatment of rheumatic diseases by bee-venom. After discussing the history of this treatment, which goes back to the earliest days, the author deals with the biochemistry and mode of action of animal poisons in general and bee-venom in particular, and with the methods by which the venom may be extracted. The pharmacology of bee-venom is dealt with in detail. The author then discusses the relation between the immunity so produced and its therapeutic action in rheumatism. Finally, the methods of application of the various proprietary preparations of bee-venom in the treatment of different forms of chronic rheumatism, neuralgia, and neuritis are dealt with. A bibliography is included.

Under the title of *The Eruptive or Exanthematous Mediterranean Fever* (Rome: Luigi Pozzi, 18 lire) Dr. CARLO COSTANZI, assistant director of the Policlinico Umberto I at Rome and assistant to Professor Agostino Carducci, who contributes the preface, gives an excellent description of this disease, which is known as summer typhus or boutonneuse fever, and was first described by Conor and Bruch in 1910. The text is interspersed with photomicrographs and illustrations, and a bibliography of 166 references is appended.

Preparations and Appliances

PORTABLE OPHTHALMIC TESTING UNIT

Dr. J. HORTON YOUNG (Assistant Medical Officer for Eye Diseases, Wolverhampton) writes:

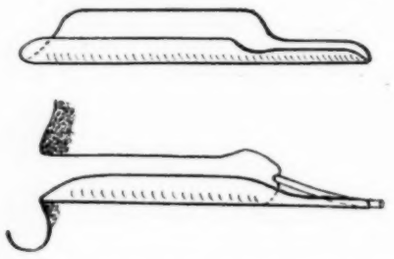
I have designed a portable ophthalmic testing unit which may be used for testing visual acuity, for Worth's binocular test, and for objective examination of the eyes, as in retinoscopy or ophthalmoscopy. This portable unit is divided into two parts—the carrying case, equipped with handle, lock, key, and four slide racks to carry extra test types, etc., and the actual testing unit. This may be removed from the carrying case when tests for visual acuity are being done, or may be left in the case when it is desired to do Worth's binocular test or to make an objective examination of the eyes. The testing unit itself is internally illuminated and revolvable on a hollow boxed base. The revolving drum, which is freely movable and smooth in action, carries four test types (children's and Snellen's standard types, 6/60 to 6/4.5). The retinoscopy or the Worth's binocular test diaphragms may be substituted for the opal test types as required. The hollow box base carries flex, a two-way plug, and a triple-faceted power plug, so that it can be plugged into any alternating electric power source. There is also room in the hollow base for Morton's non-luminous ophthalmoscope, condensing lens, and loupe.

The weight of the combined testing unit is 13½ lb. and the over-all dimensions of the carrying case are 14½ inches by 10½ inches by 8⅝ inches. The instrument has been designed primarily for school medical officers, but may be used in hospitals for those patients who are unable to leave the ward. I am indebted to Mr. Rogers, lecturer in handicraft at the Bushbury Hill School, for technical advice and the actual construction of the instrument. Messrs. F. Davidson and Co. of London, whose courtesy enabled me to obtain the necessary standard opal test types to specification, state that they would be prepared to make a similar instrument for any other medical officer who may require one.

SPLINT FOR INDWELLING CATHETERS

Mr. JOHN GROCOTT, F.R.C.S. (Stoke-on-Trent), writes:

Having had many unfortunate experiences with indwelling urethral catheters I attempted to discover a simple yet efficient retaining mechanism. Tape and strapping, and sutures and strapping, have two main faults: (1) the external meatus and adjoining catheter cannot be kept sterile, and (2) the soft rubber catheter tends to curl and to be extruded through a gap between the tapes. This second difficulty can be overcome by the use of a stiff gum-elastic catheter in place of the usual soft rubber variety, but additional urethral trauma is caused by the stiff catheter and it soon becomes incredibly filthy. Other methods, as by using rubber bands with studs, have in my experience been worse than useless and decidedly uncomfortable for the patient. I therefore devised a metal splint made of 18-gauge aluminium sheet. The splint is in reality a straight double trough, which can be made in a few minutes.



The splint is sterilized by boiling and applied after catheterization with a soft rubber catheter. From the illustration above it will be seen that there is a gap between the splint and the catheter as it emerges from the penis. This gap can be packed with sterile vaseline gauze and kept completely sterile by covering it with zinc oxide strapping. When the splint is in position the whole is strapped in a continuous spiral from the root of the penis right on to the catheter. This makes a completely airtight joint of penis to catheter and sterility is assured. I have used this method of strapping with complete success. On no occasion has the catheter slipped out, and what is more important it seems to be almost an impossibility for a uraemic patient to pull it out. Another advantage is the absence of any marked urethritis even after the catheter has been *in situ* for at least eight days. The splint is very comfortable, and providing the edges of the aluminium are quite smooth no chafing of the penis occurs. The removal of the splint is easy, cleaning and resterilization are very simple, and —an important fact—these splints could be manufactured in varying sizes for only a few pence each.

NICOTINIC ACID B.D.H.

This relatively simple substance ($C_5H_4N.COOH$) is stated to be the precursor of the pellagra-preventing factor in the vitamin B complex, and is now prepared and issued for clinical trial. The dose suggested by British Drug Houses, Ltd., is 30 mg. by mouth twice daily. Clinical trials in the U.S.A. indicate that nicotinic acid has a dramatic curative action in pellagra. This action will doubtless be investigated intensively in the near future in all countries afflicted with pellagra, and there is in addition the chance that accessory actions may be found which are of service in other diseases.

The introduction of nicotinic acid for clinical trial completes a curious circle, since it was the first substance isolated from the vitamin B complex. This was achieved by Casimir Funk in 1913, and he suggested that "vitamine B" was nicotinic acid. Research developed along other lines: "vitamine B" became the vitamin B complex; a series of factors were identified, but nicotinic acid appeared to be of no significance and was almost forgotten. Now at last it has been found to be one of the most important of all the factors in the complex mixture of chemicals that originally was labelled "vitamine B."

A TAR APPLICATION

"Tar dermament" (Messrs. Parke, Davis and Co.) is a solution representing 6 per cent. washed crude coal tar in a mildly analgesic resinous base. It is recommended for a variety of cutaneous disorders such as psoriasis and pruritus.

The simple extension apparatus described by Mr. M. D. Sheppard in the *Journal* of March 26 (p. 677) is manufactured by Body's Pharmacies Ltd., 1, Moulsham Street, Chelmsford.

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FACT AND FANCY IN MATTERS THYROID

With this arresting heading Professor J. H. Means opens the concluding chapter of his excellent book on the thyroid and its diseases, which is reviewed elsewhere in this issue (p. 781). The thyroid is an internal secretory gland. Its sole function is elaborating and storing its own peculiar hormone, and no other substance can take the place of the hormone in the organism deprived of its thyroid. In the colloid of the thyroid there is a protein (thyroglobulin) which owes its peculiar chemical and physiological characteristics to its content of two iodine-containing amino-acids. The thyroid alone appears to possess the means of adding iodine to the tyrosine molecule; the iodine-containing amino-acids so formed combine with other amino-acids to form thyroglobulin, which is stored as colloid. One of these amino-acids has been prepared synthetically—thyroxine—and was at one time regarded as the thyroid hormone, but the evidence goes to show that the activity of thyroglobulin is much more closely related to its total iodine content than to its thyroxine content. The active substance may be a peptide, intermediate between thyroglobulin and thyroxine; anyway, its action appears to be specific. Iodine, then, is necessary for the proper function of the thyroid. When there is relative or absolute iodine want hypertrophy of the gland occurs—simple goitre—which may be followed by atrophy when the deprivation continues, or may regress to normal if iodine is given. Hyperthyroidism or toxic goitre too responds in a remarkable way to administration of iodine. There is a striking amelioration of symptoms and reduction in the basal metabolic rate accompanied by involution changes in the active thyroid cells. In both instances the effect is due to the action of iodine on the gland substance altering its function of delivering hormone to the body. In thyrotoxic patients iodine appears to obstruct the delivery of hormone from the thyroid at any time during the course of the disease. But the morbid stimulus to the thyroid continues to work. Professor Means summarizes the position by using an analogy. Giving iodine in toxic goitre may be likened to putting on the brake in a running motor car without changing the position of the accelerator. The brake is iodine, the accelerator is the cause of thyrotoxicosis. Iodine therefore has no effect on the duration or direction of progress of the disease; it affects at any one time merely its intensity.

The thyroid function thus is linked with the metabolism of iodine in the body. The thyroid hormone is necessary for the growing organism, and in its absence the normal development of the body is retarded. In the adult too the thyroid hormone functions by regulating and stimulating the metabolic rate. In the toxic states of exophthalmic goitre it was thought at one time that there was something more active than excess of thyroid hormone, and it was assumed that a chemically different hormone was excreted into the blood, producing a state of dysthyroidism. A modification of this theory is that while excess of the normal thyroid hormone produces the increased metabolic rate, sweating, tremor, and nervous state, a second hormone from involuting thyroid lobules (hormone of degeneration) is responsible for the cardiac symptoms, rapid heart beat, and myocardial degeneration. There is no need to assume that there is more than one thyroid hormone, or to differ from the view which Moebius stated long ago that states of hypothyroidism or myxoedema are due to insufficiency of thyroid hormone, and of thyrotoxicosis (Graves's disease, Basedow's disease) to excess of this hormone being excreted into the blood. In thyrotoxicosis it is the same hormone but produced in excessive amounts by the actively secreting thyroid.

The cause of thyrotoxicosis—the stimulus to excessive function of the thyroid—must be sought therefore outside the thyroid. The earliest theory was that it was a nervous state, and the aspect of permanent fright of the exophthalmic goitre patient was adduced as evidence of excessive nervous excitation. Abnormal stimulation from the periphery was suspected, but the increased perfusion rate of the tissues and the increased oxygen usage are really the results and not the cause of excess of thyroid hormone in the blood. Recent work has shown that a functioning anterior lobe of the pituitary gland is essential for the normal development and function of the thyroid. The secretory tone of the normal thyroid is kept up by a continual stimulation from the anterior pituitary by means of its secretion—a thyrotropic hormone. When pituitary support of the thyroid is withdrawn the latter continues to function, but at a reduced rate; and excessive function of the anterior lobe causes the most intense activity of which the thyroid is capable. The increased metabolic rate, nervous-

ness, loss of weight, and tachycardia occur in animals in which extract of anterior lobe is injected, and the effect is through the medium of the thyroid, since it does not occur after removal of the thyroid gland. But it is believed that even the pituitary control of the thyroid is within limits, that it is relative, not absolute. Indeed Cope in a recent investigation[1] failed to find evidence that the anterior pituitary gland is usually responsible for the hyperthyroidism of primary Graves's disease. He found the serum of patients with Graves's disease had a depressant rather than a stimulant effect on the thyroid glands of guinea-pigs, and interpreted this finding as evidence against thyrotropic hormone (anterior lobe) being present in excess in the blood serum; rather that the depressant action is due to excessive thyroid hormone in the blood. It is known that thyroxine and thyroid hormone have an inhibitory effect on thyroid secretion. Other workers too have found no evidence that in human thyrotoxicosis there is an increase in thyrotropic hormone in the blood. Nor on clinical grounds is there anything to suggest adrenocortical failure in toxic goitre. A constitutional factor has been postulated; cases of hyperthyroidism occur in families. Since at the onset of so many cases emotional and stress factors are found, hyperthyroidism has been linked back to the hypothalamus and to control by the sympathetic. The thyroid gland itself is plentifully supplied with nerves, both sympathetic and parasympathetic. Within the gland the nerve fibres form dense plexuses—a vascular plexus and an interfollicular plexus, with many communications between the two. These nerves must take some part in the regulation of secretion and storage through the medium of the blood vessels, though evidence is lacking of direct stimulation of parenchymal cells by way of nerve fibres.

Subtotal thyroidectomy in the fully iodinized patient offers at present the best means of dealing with thyrotoxicosis, though removing the thyroid gland does not remove the cause of the condition, which is almost certainly extrathyroidal. Pemberton makes the point that subtotal thyroidectomy must have some more far-reaching effect than merely reducing the output of thyroid hormone, since if the causative factor continues to operate recurrence would be common; and this is not so. Operation may so reduce the amount of thyroid hormone as to break some vicious circle of causative factors, thus allowing in many instances permanent restoration of the patient to a state of health. Nevertheless the present-day treatment will not be, we may hope, the ultimate treatment.

[1] Cope C. L. (1938). *Quart. J. Med.*, **31**, 151.

ELECTRICAL INTERFERENCE WITH WIRELESS RECEPTION

The British Medical Association has lately had under discussion the effect of possible future legislation on the users of various forms of electromedical apparatus. The object of such legislation would be to suppress excessive interference with broadcasting and other wireless services from various electrical devices, including the appliances used in medical diagnosis and treatment. Whereas the interference caused by generators of galvanic, faradic, and sinusoidal currents can be eliminated by simple and cheap methods, this is not so in the case of diathermy and short-wave machines, which produce etheric disturbances of the same nature as wireless waves. There are two ways in which such interference might be minimized. First by effectively screening the apparatus and patient, and, secondly, by the allocation of certain wavebands, coupled with legislation prohibiting the use of apparatus that does not conform to the requirements.

The cost of effective screening and providing the necessary filters is estimated at £15 to £20 for a room 12 ft. × 16 ft. × 8 ft. high. Having regard to the varied applications of high-frequency currents in the field of medicine and surgery and their special branches, and the varying conditions of practice, screening is in some cases impracticable, and it has been pointed out that to restrict facilities for treatment by electrical methods would be a retrograde step and against the public interest. The apparatus often has to be taken to the patient and not the patient to the apparatus. To comply with the requirements it might thus become necessary to convert certain sections of hospitals or nursing homes, including operating theatres, electrotherapeutic departments, and special wards, into "Faraday cages," and as this would be impossible where the patient's own home is concerned the use of such apparatus in the patient's home might have to be prohibited unless certain specified frequencies were used. Under this alternative method the difficulties, though great, are not insuperable. The reservation of certain bands and the restriction of certain types of apparatus which cause undue interference to certain definite regions is at least a practicable proposition if suitable bands could be determined. Two important questions arise under any such scheme. In the first place it is possible that the definition of the optimum band might have to be modified if it could be shown that better results were obtainable by the use of different wave-lengths. Research is at present being carried out, particularly on the Continent,

into the effect of different wave-lengths in different diseases, but no definite conclusions have yet been published. Provision should be made, however, for any decision as to the most suitable band to be reviewed in the light of further research. Secondly, if the use of electro-medical apparatus were restricted as suggested, what arrangements could be made for the carrying on of research on lines such as have been indicated above? In this connexion it is probable that some form of screening might provide a solution of the difficulty.

Discussion has taken place between the Government Departments concerned and the professional interests chiefly affected, but the British Medical Association would welcome the opinion of any who are interested or who can suggest further methods of dealing with this important problem. It has been suggested that appropriate reservations might be made in the following regions: medium wave 100–200 metres, short wave 10–100 metres, and ultra short wave 2–10 metres. A preliminary survey indicates that waves in the neighbourhood of 150 metres, 30 metres, and 6 metres might be satisfactory for medical purposes provided that suitable provision can be made both for research and for revision in the light of further experience. There is considerable doubt whether these particular waves could be allotted, but it is possible that a band of 30 kc. round about 110 metres and frequencies in the neighbourhood of 2 metres may be available.

The matter plainly deserves serious study. On November 10 last year the Postmaster-General was asked in the House of Commons whether he could give an assurance that the necessary legislation to deal with the question of electrical interference with broadcast reception in this country would be introduced during the current session of Parliament. While he was unable to give the assurance that a Bill could be introduced during this session, he said that the proposals to be embodied in a Wireless Telegraphy Bill to deal with the question of electrical interference with broadcast reception in this country were being actively pursued. Readers having information to give should send it to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

WHAT IS GOUT?

It may seem strange that in the twentieth century such a question can be put concerning a disease known to Hippocrates and graphically described by Sydenham. Apart, however, from the characteristic acute outbreak in the great toe and the implication of other joints in a similar manner in the later stages there has always been a tendency to regard other morbid states occurring in patients who have suffered from the acute form as being necessarily of the same origin. We have, for example, been led to believe in such conditions as gouty iritis and gouty phlebitis. If the patient suffering from iritis or phlebitis has had acute gout at a previous stage in his history it may be difficult to prove that they are not associated with a similar metabolic derangement. Often, however, the adjective "gouty" has been applied to such disorders because of their superficial resemblance to cases clearly of gouty origin or because they have appeared in persons of plethoric aspect; thus many ailments, and especially those affecting joints and muscles, have been diagnosed and treated as gouty in the absence of any stronger evidence. The terms irregular, metastatic, and retrocedent gout—less often heard nowadays—were used to describe disorders attributed to gout but which had actually no relation to the derangement of purin metabolism which was so ably and clearly described as the basis of gout by Sir Walter Langdon-Brown in opening the discussion on this subject at the International Congress on Rheumatic Diseases at Bath last week.

The exact part played by uric acid itself in the production of gouty symptoms is still far from clear, but it may safely be said that gout is associated with an excess of uric acid in the blood and its deposition in the form of sodium biurate in the tissues. Upon the demonstration of these features the diagnosis of gout should depend. Modern laboratory facilities are now so readily available that an examination of the blood for the amount of uric acid present should be a routine procedure; in its absence, or in the absence of definite tophaceous deposits, the diagnosis of gout will lack proof. Uric acid may be present in the blood in excess in other diseases, such as leukaemia, but is deposited in the tissues only in gout. Such deposits may not be easy to find and are detected in probably less than a third of the cases. The amount of uric acid in the blood should not exceed 3.5 mg. per 100 c.cm. in women and 3.7 mg. in men, though these limits may sometimes be exceeded without the appearance of symptoms of gout. In a small proportion of cases of gout the content of uric acid in the blood is within normal limits, and when this is the case other evidence will need to be very clear to justify the diagnosis. It is possible that the rate of deposition may vary widely and that in some instances the excess is quickly deposited and the level in the blood kept at or below the normal, whereas in others the affinity of the tissues is less pronounced and the excess of uric acid is removed from the circulation more slowly. For long the question has been

debated whether the excess of uric acid is due to increased production or diminished excretion and whether the fault lies with the liver or the kidney. That the kidney is not primarily at fault is clearly shown by the fact of the increase in excretion during an attack. Sir Walter Langdon-Brown supported the view that normally the uric acid reaches the kidney conjugated with a nucleoside and that its retention may be due to the failure of this conjugation to occur. Many years ago Sir Alfred Garrod observed that the amount of uric acid excreted by gouty persons between the attacks fell far below the normal level in many instances. Deposits of sodium biurate have often been demonstrated in the articular cartilages of persons who have never been the subject of acute attacks, and apart from the formation of tophi it is reasonable to assume that deposition takes place in other connective tissues and is the basis of abarticular gout, though further investigation in this direction is required.

The acute paroxysm is not due, it would appear, to the deposition of uric acid but more probably to its reabsorption under the influence of some other factor. The view has been advanced that the tissue cells in whose neighbourhood deposition takes place are thus sensitized, and in the presence of some allied product of purin metabolism an allergic reaction takes place, resulting in the discharge of biurate into the circulation from these deposits with the production of the local inflammation as well as the constitutional symptoms of the acute paroxysm. Such a view, however, does not explain the symptoms and general characters of the more chronic types of gout as seen in these days. That it may assume forms which differ widely from the classical type is coming to be much more recognized and may lead to a revision of the opinion often expressed that the disease is much less common than formerly. Ludwig, Bennett, and Bauer[1] have reported a case which was diagnosed as rheumatoid arthritis in its earlier stages but which showed definite gouty tophi later, with ankylosis of many joints, especially the fingers. The authors make the following important observation: "Many of the so-called specific therapeutic measures for rheumatoid arthritis such as vaccines, sera, colloidal injections, removal of infected foci, colon irrigations, endocrine therapy, etc., are prescribed and erroneously given credit for curing an attack of rheumatoid arthritis, whereas the patient was suffering from a self-limited attack of gouty arthritis." Many physicians of experience in joint diseases will agree with this statement. It is important that these aspects of gout should be more generally recognized, for gout may imitate very closely rheumatic fever and gonorrhoeal arthritis as well as rheumatoid arthritis. Tophi may easily be overlooked if not searched for; if present they will furnish the most trustworthy clue available to clinical investigation. Examination of the blood will often reveal an unexpectedly high level of uric acid in cases diagnosed as fibrositis and sometimes in what appears to be typical rheumatoid arthritis. Olecranon bursitis should always arouse suspicion; it is due to gout more often than to any other condition. The authors state that the initial attack of gout only affects the big toe in 54 per cent. of cases. Even this figure may be found to be too high on further study. The part played by low-grade sepsis appears to be important, and the variability of the sedimentation rate in cases of gout indicates that a septic infection is often a factor in the development of gouty symptoms of the chronic type. On the other hand, an arthritis may be caused by a septic focus in a gouty individual in whom the presence of uratic deposits may play no part in the production of symptoms. It is at least certain that many cases of so-called gouty iritis have been solely the result of septic infection from teeth or tonsils. The only means of differentiation appears to lie in the specific action of colchicum in relieving symptoms of gouty origin.

The discussion at Bath covered a wide field, and the observers from many countries who took part made several valuable observations. Dr. van Breemen of Amsterdam ably summed up the position by remarking that we had accumulated many bricks of knowledge but lacked as yet an architect who could construct a building from them.

[1] *Ann. intern. Med.*, 1938, **11**, 1248.

SURGICAL TREATMENT OF DIABETES

Although the history of medical research shows a few instances in which experiments based on insecure generalizations have chanced to be brilliantly successful, the vast majority of such experiments have ended in failure. In research this failure harms only the ill-conceived hypothesis, but when surgical procedures on the human patient are undertaken on similar insecure foundations the result may be harm to the patient. This is nowhere better illustrated than in the attempts which have been made to effect a cure of diabetes mellitus by surgical means. As an apt example, removal of the suprarenal glands may be mentioned. In some animals, but not in others, resection of these glands ameliorates pancreatic diabetes; unfortunately it is also true that fatal "Addison's disease" is produced by the same procedure. It is not therefore surprising to learn that resection of varying amounts of suprarenal tissue in human diabetics has had little, if any, effect upon the diabetic state but has resulted in fatal Addison's disease.

Sendrail, Cahuzac, and Garipuy[1] have recently recorded observations on dogs which lead them to think that diabetes mellitus may be benefited by peri-arterial sympathectomy performed on the pancreatic arteries. As this operation has not yet been applied to diabetic patients criticism of the experimental results may be timely. The investigation was apparently inspired by Leriche, who, struck by Allen's observation that manual obliteration of the arterial supply to the pancreatic remnant in a partially depancreatized dog resulted in diabetes, asked if augmentation of the flow of arterial blood to the pancreatic remnant would not guard the animal against this disorder. The results of peri-arterial sympathectomy of the dog's pancreatic arteries are recorded in their paper. After the operation there was first a short period of hyperglycaemia and then a period in which the blood sugar returned almost to normal. For the next two months there was a gradual rise in the fasting blood-sugar level, and finally a fall of the blood sugar to "subnormal" levels which persisted until the animals were killed at the end of a year or so. The changes in the glucose and insulin blood-sugar tolerance tests reflect these variations in fasting blood sugar. The authors interpret these variations as being due to corresponding variations in the rate of secretion of pancreatic insulin consequent upon changes in the flow of blood through the pancreas. They claim that the "subnormal" fasting blood-sugar levels which finally persist indicate permanently increased secretion of insulin. Many workers, however, would not consider these blood-sugar levels significantly low but would regard them as the usual levels in dogs which have become habituated to a routine of regular meals and restricted exercise. An attempt has been made to correlate these biochemical changes with the appearance of the pancreas. Immediately after the operative manœuvres the pancreas becomes blanched. During the next month or two it assumes "une teinte violacée," which may be so marked that it may be difficult to distinguish the pancreas from the spleen. Parallel with this increasing cyanosis of the pancreas an increase in weight of the organ occurs, so that it may become two or three times heavier than normal. The final stage is reached after two or three months, when the cyanosis disappears and the weight of the pancreas returns almost to normal values. It is in interpreting the cyanotic colour of the pancreas as indicative of hyperaemia that the authors may perhaps be in error, for cyanosis means not increased but retarded blood flow. It appears more reasonable to interpret the cyanotic colour as indicating a considerable degree of passive pancreatic congestion, and this interpretation is supported by the accompanying rapid increase in weight of the gland, which can most easily be attributed to oedema. A simpler explanation of their results would then appear to be as follows. The operation is followed by the hyperglycaemia which always follows manipulation of the pancreas. With recovery from operative trauma, however, the pancreatic function returns and the blood sugar falls. During the next two months scar tissue develops and constricts the veins, so that the pancreas becomes congested, increases in weight, and appears cyanotic; the outflow of insulin from the pancreas is consequently limited, so that the fasting blood-sugar level slowly rises. Finally, a collateral circulation of veins develops, circulation through the pancreas again becomes normal, and the blood sugar falls to normal levels. So long as this simpler explanation of the experimental results is tenable it would appear unjustifiable to use the conclusions of Sendrail and his colleagues as a guide to operations of a like nature on diabetic patients.

[1] *Presse méd.*, 1937, **45**, 1797.

PREVENTION OF BLINDNESS

The Prevention of Blindness Committee was established by the Union of Counties Association for the Blind to correlate certain parts of the work of the voluntary agencies concerned with the care of the blind. The committee has done good work. It will now cease to exist, for the Ministry of Health has agreed to appoint a standing advisory committee on blindness, including the prevention thereof, which will carry on the work initiated by the voluntary committee. The committee has issued five reports on the causes of blindness. The fourth publication, issued in May, 1936, was a notable piece of work. A supplement to this report[1] is now issued which embodies an analysis of a preliminary classification of the causes of blindness, and which the committee holds indicates further lines of research, and also emphasizes the value of certain regulations for the prevention of blindness, and the need for increased facilities for remedial treatment. The report shows that the number of registered blind in England and Wales in 1922 was 34,394, and in the last return (for 1936) it had increased to 67,521. The increase, it is stated, cannot be interpreted as a growth in the incidence of blindness in the country. It is due to increased benefits available for the blind, and therefore to better registration. Analyses of the causes of blindness are given for several thousand cases, mostly of persons over the age of fifty. The main causes of blindness in order of frequency are: primary cataract, 24.97 per cent.; glaucoma, 11.09; congenital defects, 10.96; myopia, 10.24; local infections of the coats of the eye, 5.97; congenital syphilis, 5.12; acquired syphilis, 2.83; ophthalmia neonatorum, 4.91; industrial trauma and disease, 1.39; other categories, 22.52. In the return received from different places there are remarkable variations; these need further inquiry and explanation—for example, blindness from myopia in Scotland is put as high as 17.1 per cent., and in Birmingham as low as 4.4 per cent., whereas for the greater number of cases from England and Wales the proportion is 10.24 per cent. It is of interest to note that no less than 83.85 per cent. of those blinded by ophthalmia neonatorum were born before the regulations regarding the prevention of this disease came into effect; only 16.15 per cent. were born since 1914 (the year in which the Public Health (Ophthalmia Neonatorum) Regulations came into operation), and none since 1932. There

[1] Report on an Analysis of a Preliminary Classification of the Causes of Blindness by the Prevention of Blindness Committee, 1938.

could be no more emphatic endorsement of the value of scientific measures for the prevention of disease than such figures as these. But all causes of blindness are not so amenable to control as is ophthalmia neonatorum. The work initiated by the Prevention of Blindness Committee has been of great value; we may wish a continuity of success to the new advisory committee of the Ministry of Health.

INDIGESTION AND PATENT MEDICINES

The commercial make-up of the wireless programmes in the United States of America seldom fails to astonish the newcomer to its shores, though impatience with the smooth-tongued announcers' dogmatic advice concerning gastro-intestinal misconduct is often tempered by apprehension of the infinite harm such propaganda might do to the more credulous listeners. The gravity of this problem is brought home by A. B. Rivers in an article, "The Dangers of Treating 'Indigestion' by Advertised Nostrums," in the *Proceedings of the Staff Meetings of the Mayo Clinic* for February 9. His recent survey of the incidence of dyspepsia among a large number of patients attending the clinic shows that nearly half between the ages of 30 and 60 include among their complaints that of indigestion. In men over 40 the most frequent causes of this are listed as follows in percentages: peptic ulcer 23; functional 20; cancer of the gastro-intestinal tract, pancreas, etc., 17; cancer of the stomach 12.2; cholecystitis 9; cardiovascular disease 5. In women over 40 the figures are: cholecystitis 24.5; functional 19.8; peptic ulcer 9.5; cancer of the gastro-intestinal tract, etc., 5.8; cardiovascular disease 4.8; cancer of the stomach 4.2 per cent. In studying this table, it is startling to think of the fate of dyspeptic men and women over the age of 40 whose symptoms are temporarily masked by patent medicines so that they procrastinate in seeking medical advice. But in all matters relating to disease, Sir William Osler said nearly thirty years ago, credulity remains a permanent fact, uninfluenced by civilization or education.

CO-ORDINATING MEDICAL RESEARCH IN CANADA

Sir Frederick Banting, Director of the Department of Medical Research at the University of Toronto, has been nominated by the National Research Council as chairman of a new committee to study the organization of medical research in Canada. This action was taken on the recommendation of a conference on medical research held in Ottawa and attended by representatives of all the medical schools, organizations, and institutions concerned in medical research, including the provincial departments of health, the Department of Pensions and National Health, and the National Research Council. Four *ex-officio* officers are the President of the National Research Council, the Deputy Minister of the Department of Pensions and National Health, the President of the Canadian Medical Association, and the President of the Royal College of Physicians and Surgeons of Canada. To complete the personnel of the committee invitations have been extended to twelve distinguished members of the medical profession, each of whom has specialized knowledge in a particular field and all have a broad general training and comprehensive knowledge of Canada's requirements in medical research. In order to provide continuity and adaptability members will be appointed for terms of two, three, or four years, and will be eligible for reappointment for a further term. Dr. T. H. Leggett, who retires from the presidency of the C.M.A. in June, has been asked to serve as an additional special member so that the committee might have the benefit of his wide experience. It has been suggested by many members of the medical profession in Canada that the formation of this committee on medical research under the National Research Council might well be a first step towards the formation of a medical research council for Canada similar to that which exists in Great Britain. The immediate purpose of the committee is defined in the terms of reference, which are: (1) to receive suggestions for requirements in respect of medical research and in matters related thereto; (2) to consider by whom the investigations required can best be carried out and to make proposals accordingly; (3) to correlate the information when secured and to make it available to those concerned; (4) to do such other things as the committee may deem advisable to promote medical research in Canada. The conference agreed that the scope of the new committee's activities should not be limited to particular subjects, but that it should be empowered to investigate the whole field of medical research in Canada. One of the first steps to be taken will be to make a survey of the work in progress at various centres to determine how the activities of the institutions concerned may be developed to the best possible advantage.

THE MACHINE AND THE WORKER

In Report No. 82 of the Industrial Health Research Board,[1] Messrs. S. Wyatt and J. N. Langdon, assisted by F. G. L. Stock, describe their investigations on women employed upon various kinds of machine-feeding processes. Such work is pursued, year in and year out, by hundreds of thousands of persons, and its extent is likely to increase in the future as the mechanization of industrial processes develops. The work is inevitably monotonous, so it is of outstanding importance that the degree of monotony should be reduced, where possible, by choosing the most favourable conditions of work. It is only by careful and exact measurements such as are described in this report that the requisite information can be ascertained, and several conclusions of direct practical value have already been arrived at. The authors point out that the outstanding psychological problem is the conflict between mechanical uniformity on the one hand and human capacity on the other. The management tend to run their machines at the highest possible speed in the hope of increasing output, but in consequence of this many

[1] H.M. Stationery Office. (9d.)

operatives find themselves struggling to work at a pace which they are unable to maintain, and fall victims to strain and over-fatigue. In some instances it was found that a slowing of machine speed improved the output substantially, but on the other hand some of the machines were run at too slow a pace, and their acceleration was welcomed by the operatives. The most suitable speed naturally varies a good deal in different individuals, and it also varies in the same individual at different times of the day, according to her state of alertness or fatigue. The most satisfactory method of overcoming these variable requirements is to fix cone pulleys to the machines, whereby the operator can at any time change the speed to what she thinks to be best suited to her immediate desires. As the operators are on piece rates there is no likelihood that they will work at too slow a rate. The personal likes and dislikes of the workers were probed by means of questionaries, and the replies were very instructive. The most popular "likes" of the operatives employed on machine-feeding were "pleasant working companions," "hours of work not too long," and "good wages," while the most frequent "dislikes" were aroused when the operatives had to wait at the machines for the arrival of material. The adverse effects of noise, monotony, and fatigue were not referred to nearly so frequently. Nearly two hundred women employed on belt-conveyors were interrogated. This type of work is less popular than machine-feeding, and the operatives were much more subject to monotony. This was owing to the simplicity and uniformity of the movements performed and the restraining influence of the conveyor, which moved at a uniform rate with very few stoppages from mechanical or material cause.

SMOKING AND LONGEVITY

Professor Raymond Pearl of Baltimore has not always or even usually, been a writer grateful to those who desire to control the amusements of their fellow creatures. The family history records of his laboratory gave a testimonial to the moderate drinker, and perhaps members of the anti-tobacco league (if there is such a body) or our esteemed colleague, Dr. J. D. Rolleston, may not have expected much support from the Department of Biology at Johns Hopkins. But, eleven years ago, Dr. J. Rosslyn Earp,[1] working in the department, showed statistical reason for thinking that, at least at one college, students who smoked did not do so well either in work or play as abstainers. Now Professor Pearl[2] gives life tables from age 30 for 2,094 non-users of tobacco; 2,814 men who smoked tobacco in moderation but did not chew or use snuff; and 1,905 men who were heavy smokers but did not chew or take snuff. The non-smokers have the advantage, slightly over the moderate and greatly over the heavy smokers. Thus 45.9 per cent. of the non-smokers (it must be remembered that the age of entry is 30 years) live to 70, 41.4 per cent. of the moderate smokers, but only 30.4 per cent. of the heavy smokers. "In this sizable material the smoking of tobacco was statistically associated with an impairment of life duration, and the amount or degree of this impairment increased as the habitual amount of smoking increased." This is a preliminary communication, and naturally Professor Pearl refrains from drawing aetiological conclusions; he states a correlation, but some little distance must be travelled before one can be sure that non-smokers live longer than smokers because they do not smoke. However, as the financial interests of those who sell tobacco are of the same order of magnitude as those of the vendors of alcoholic drinks and the pipe has inspired almost as much prose and verse as the wine cup (one wonders whether, had tobacco been in use in the Rome of Augustus, Horace would have surpassed Odes III, 21), we may safely predict a lively controversy.

[1] *The Student Who Smokes*. London, 1927 (Lewis).
[2] *Science*, 1938, **87**, 216.

CHEMOTHERAPY IN VIRUS DISEASES

It has recently been reported by Rosenthal, Wooley, and Bauer[1] that prontosil exerts a protective action against lymphocytic chorio-meningitis in mice. This observation denotes an entry into the wide field of virus diseases, where there was no previous reason for supposing that these drugs would have any effect, since viruses differ profoundly from bacteria in many ways, including their reaction to destructive chemical agents. There is still no evidence that prontosil or sulphanilamide will influence the course of any virus infection in man, unless in the form of reports that the latter will abort colds, and since colds may sometimes be due to bacteria such evidence is inconclusive. There is now, however, another arresting report of successful chemotherapy of virus disease in an animal. Sodium sulphanilyl sulphanilate, a compound chemically related to sulphanilamide, is said by A. R. Dochez and C. A. Slanetz[2] to have not only a prophylactic but a well-marked therapeutic effect in canine distemper. This distinction is profoundly important; the intracellular position of the virus in established infection might well be regarded as making it inaccessible to chemotherapeutic agents, just as it is to specific antibodies; the contrast between the efficacy of serum in protecting against virus infections and its uselessness in treating them is complete and well known. The authors of this short paper do not discuss this aspect of the matter, nor do they discuss the chemical relations of the drug used or disclose the process of reasoning or experiment which led to its choice. Their findings in experimental distemper are supported by the results of treating twenty-eight cases of the spontaneous disease, of which twenty-six recovered. The treatment was also found effective in cat distemper. In view of Dochez's almost lifelong interest in virus diseases of the respiratory tract in man, it may be presumed that he will lose no opportunity of trying this treatment in influenza.

The King and Queen will pay an official visit to Birmingham on Thursday, July 14, to open the new Hospitals Centre.

[1] *Publ. Hlth. Rep.*, Wash., 1937, **52**, 1460.
[2] *Science*, 1938, **87**, 142.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

TREATMENT OF FACIAL WOUNDS AND CUT THROAT

BY

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The management of accidental and operative wounds of the face is an attractive task, since as a rule their healing leaves final appearances so pleasing that our patient's satisfaction is often commensurate with our estimated deserts. The normal sound healing of the face and the inconspicuous surgically beautiful scars that are easily attained may be ascribed in some measure to two causes —the abundant supply of blood to the facial tissues and the perpetual exposure of its skin to the beneficial effects of air and sunlight. With wounds elsewhere, in ambulant patients, these latter influences are difficult to maintain as adjuvants to healing, since most of the rest of the body is habitually swathed in clothing that insulates it as effectively as does a surgical dressing. The hands, it is true, are bare, but they are in too constant use and movement to permit us to dispense with protective dressings and even splints, in any but the most trivial wounds. The scalp is in striking contrast with the face in surgical behaviour; for though nowhere is surgical skill more certainly rewarded, the neglected scalp wound may become dangerously and heavily infected unless the hair has been shed, when the chance of healing by first intention approximates to that enjoyed by the face. The hairy scalp, however, is handicapped by the habitual presence of dirt and desquamations; for whereas everybody's face is commonly kept clean, in all classes and in both sexes the condition of the scalp is hardly what Western culture might lead us to expect. Furthermore, once healing has occurred in the head and neck, the later conversion of young and vascular cicatricial tissue into a linear contracted and inconspicuous scar is a much more speedy process than in most other parts of the body. This is partly on account of the influences noted and partly because in the erect or seated attitude those portions are the highest in the body and are thus immune from the effects of venous congestion, which may long delay the whitening of scars of the extremities and lower abdomen and may also be among the causes of stretching of scars in the latter positions. The head and neck being thus favourable for success, it remains for us to concentrate our attention on the methods of securing first-intention healing and narrow linear mobile scars.

Abrasions

If there is visible dirt in an abrasion it should be gently removed with forceps or mops and anti-tetanic serum given in most cases. Should bleeding be still proceeding it may be checked by light pressure with a mop wet with normal saline, water, or a mild antiseptic, and when it has ceased the abraded surface may be left to ooze. The exudate is the best antiseptic, and the scab produced by its clotting is the natural and by far the best dressing. Abrasions so treated heal well, and the scab should be left in place until it drops off in days or weeks, according to the depth of the abrasion, when supple skin overlying a minimum of scar tissue is seen to have been formed under it. There is no need to disfigure the face even temporarily with coloured and irritant antiseptics like flavine, iodine, and picric acid; it should be remembered that any of them may produce a chemical inflammation of the skin, a dermatitis that occasionally may outlast the healing of the wound and even spread from the site of application. Tannic acid is a better application than any of those named; but it is unnecessary, and its blackened ugly coagulum is no improvement on a wholly natural scab. If an antiseptic is desired in the case of a dirty or greasy skin, industrial spirit is as good as any and its effects are fleeting.

In advocating the use of the natural dressing of blood-clot we may go further and say that any kind of cotton or gauze covering is prejudicial, partly because it may result in mild suppuration that would not have occurred without it and partly because its removal may result in trauma to the healing tissues, so that a corresponding excessive formation of scar tissue results. Oily or greasy applications are still worse, and it may be said in strict truth that the surest and almost the only way to make the face suppurate is by applying some form of dressing; indeed, one may go still further in stating the claims of unimpeded Nature, for when, as often happens, a two- or three-day-old abrasion is already beginning to suppurate owing to the employment of a mistaken form of treatment, the surest way to check the process is to remove all dressings, ointments, etc., and allow the exuding pus to dry, while to continue their use is very likely to result in the development of an infective and resistant dermatitis.

Incised Wounds

Where the skin is ruptured the final appearance of the resulting scar depends partly upon the success with which accurate apposition of the cut skin edges has been achieved, partly upon to what degree the underlying facial musculature, closely attached to the deep surface of the dermis, has, if divided, been prevented from retracting, and partly upon the attention paid to the niceties of skin suture. The permanent marks of stitches, even where a narrow linear scar has been made, cannot fail to draw attention to what otherwise might have been so inconspicuous as to be almost invisible. Stitches make permanent marks more by slight sloughing of the included skin than by the punctured wounds of needles, which nevertheless, if not very small, do remain visible. It therefore behoves us to use small sharp needles; but these are of no avail if we fail to employ fine and flexible suture material, if we tie our stitches too tightly, or if we leave them in place too long. It is obvious that some of the most perfect facial scars are attained by the methods evolved by plastic surgeons; among these is the use of fine buried catgut for facial muscles, with fine stitches for closing the skin, which are removed after a day or two, the buried catgut then holding the wound closed while the healing of the skin proceeds. Such methods, however, entail not only the possession of special skill in burying catgut sutures aseptically but also of suitable material against an emergency, and thus we prefer to describe simpler ways that are effective and also available for the general practitioner, who has not at hand the conveniences of the operating theatre.

Suture Material

This should be flexible and fine. Silk is finer than linen thread of a similar strength, and is thus preferable, but both have the disadvantage of needing prolonged boiling to achieve sterility. Horsehair may be brittle and thus unhandy. Gossamer or ophthalmic silkworm-gut, natural or synthetic, is one of the pleasantest materials in use, being strong for its bulk, flexible in adjustment of tension, and painless in removal, though the natural gut is hard to obtain just now owing to the war in Spain. The worst suture material is probably the ordinary medium or coarse silkworm-gut that is found in so many theatres. It is stiff, its tension cannot be accurately judged or applied, it causes sloughing of the stitch-track, because even when correctly applied it does not adjust itself to the contents of its loop, and its rigidity makes it painful of removal. Indeed, the need for the use of a fishing-gut with a tensile strength of half a hundredweight is not obvious in any part of the body.

Instruments

It is well to have fine-toothed dissecting forceps and fine-pointed artery forceps such as are used for venesection. Needles should be the slimmest triangular-pointed ones that will admit sutures, or, better still, the practitioner who likes to be well equipped may keep some of the tubes of "atraumatic skin sutures" that are prepared for plastic skin surgery, and that are employed by Sir Harold Gillies. For use with a holder needles should be curved; in the hand, small sizes are more convenient if straight.

Closure of Incised Wounds

Facial wounds that gape at all are better closed by suture unless they pass so obliquely through the skin as to make suture impracticable, when the thin flap of skin may be kept in place by pressure maintained by a single layer of open-wove gauze stuck to the skin by means of mastic varnish (for example, benzo-mastiche, Martindale); but care must be taken to use only one layer of gauze and a minimum of adhesive. A straight incised wound in a patient with self-control may be closed without an anaesthetic, but where there is any technical difficulty the practitioner is advised to content himself with the arrest of bleeding and a temporary dressing until an anaesthetic be available, though novocain injected round the wound may be all that is necessary. He should remember that although it is a good general rule to deal with compound injuries without delay, the exceptional healing capacity of the face gives him a little latitude in action; that the final result must be as near perfection as possible; and that such an end can be achieved only by an unhurried, deliberate, and accurate operation. In preparation the mechanical removal of dirt from the skin and the depths of the wound, and perhaps the cleaning of the skin with spirit, are the only things necessary.

Bleeding is best stopped by pressure maintained for five minutes or so, but if it is obstinate spurting vessels may be caught with artery forceps and subsequently either ligated or, better still, included in the bites of sutures, unnecessary buried material in a field of doubtful cleanliness being thus avoided. It should be remembered that novocain is a vasoconstrictor and with the passing of its effects bleeding may recur under the closed skin. The cut skin edges must be clearly seen and the obliquity of the cut to the surface estimated. As many deep stitches as may be necessary to hold the facial muscles together are inserted through the skin, preferably as small mattress sutures protected by bits of fine rubber tubing; but if this last is not available, stitches embracing muscles and skin are quite satisfactory provided they are effective and are not tied so tightly as to cause sloughing of underlying skin, either immediately or with the onset of the slight inevitable swelling of early healing. Small stitches taking skin only, and very close to the cut edge, are then inserted so as to approximate the edges of the wound accurately, their positions and individual tensions being most easily judged if all superficial and deep sutures are inserted before tying the knots. This is the method that was most commonly employed in the days when carcinoma of the tongue was frequently excised after splitting the cheek, and the resulting facial scars of many of them are so perfect that one has to examine them with a magnifying-glass to ascertain their presence or extent.

Removal of Stitches

It is probably unwise to remove stitches holding muscle together at a shorter period than four days, but where they are holding only skin they may be safely removed after two days, though it is better for the surgeon's peace of mind if on so precocious a removal the wound be held together with a single layer of loose-woven gauze and mastic varnish clear of the actual cut, as earlier described. Such a dressing does not prevent air drying of the slight exudate that may still come from the wound and stitch holes, and, though not ideal, it is better than leaving *in situ* stitches whose marks the passage of time may make indelible.

Lacerated and Contused Wounds

Contusion of course causes some swelling, but, remembering the great capacity for healing that the face possesses, we need not hesitate to close a laceration on account of accompanying swelling and ecchymosis. Maximal swelling from contusion occurs in the eyelids, and it should be remembered that a wound of the forehead penetrating the frontalis causes a subepicranial effusion of blood that passes without encountering obstruction into the upper eyelids, which may rapidly swell and close the palpebral fissure completely. An early effusion into the upper eyelids only need therefore arouse no suspicion of fractured skull. Lacerated wounds should also be closed according to the same rules as those described earlier, and only with the greatest reluctance should skin be excised because it is damaged; if any excision be necessary it should be minimal, and if possible be limited to the extreme devitalized edge. Where skin has been torn away and lost an immediate Thiersch graft is advisable; but if it be in any wise possible to replace an actual detached piece, this is the best graft. After suture of facial wounds the process of shrinkage of the cicatrix proceeds rapidly, and in small wounds is complete in about a month, by which time the scar will have attained its final pale appearance. With larger wounds and lacerated ones, or if by any chance there has been suppuration, the duration of the final shrinkage and devascularization is much longer, and may last six months or more, depending upon the intensity of the cicatricial reaction. In these cases it is only after the lapse of such a period that it is possible to judge as to the advisability of secondary excision of a disfiguring scar. A satisfactory facial scar is one which is linear, pale, and almost invisible. It is flush with the surrounding skin, and neither dimples nor distorts the face with expressional and other movements. The elements that go to make up disfigurement are those of scarring from sloughing, inflammation, and inaccurate approximation of

the skin edges; loss of substance resulting in deformities, especially of the eyelids; dimpling, with adhesions of scars to deeper structures due to unsuccessful closure of the facial muscles; partial paralysis of muscles due to section of filaments of the facial nerve; and occasionally swelling due to lymphatic obstruction—the last being seen sometimes in the lips, and also where the nose has been almost detached from its root so that the end becomes bulbous from lymph stasis, a condition fortunately tending to disappear spontaneously.

Wounds involving the Nares and Lips

In these wounds the test of success is the accurate approximation of the edge of the nostril or of the red margin of the lip. In the nostril this is easy, but where there is laceration the red margin may be difficult to see. It is usually possible to impale a healthy part of the red margin with a small pin on each side of the wound and thus to judge the correct placing of the sutures. If the lip be cut right through into the mouth the mucosa must be closed with catgut before approximating the skin, and owing to the thickness of the muscle of the lip it is usually advisable in this situation to use buried catgut also to close the muscular wound. In the lips and nostrils, where there necessarily is continual wetting of the wound, it is of especial importance to eschew all dressings and to leave the sutured wound uncovered. To keep such wounds partially covered with mucus- or saliva-soaked dressings is to ask for them to be infected, a request that in such circumstances is only too often granted.

Wounds of the Face with Compound Fracture

What has been said of closure of facial wounds applies to all, whether associated with fracture or not. Where a fracture is suspected an *x*-ray examination should be arranged at once, and if, as will usually be the case with a positive result, it is decided to call in surgical assistance it is better to do so as an emergency than to close the facial wound and then arrange a consultation at leisure. The alveolar margins and jaws, the malar and nasal bones, and the region of the frontal sinus are the common sites of fracture. Of these, it is true the jaws can, if necessary, usually wait a day or two for dental treatment without prejudice to the final result, but the nasal and malar bones are often depressed and need elevating, which should be done before suturing the facial wound; and the injuries of the frontal sinus carry with them the real danger of associated injury to the cranial contents, of cerebrospinal rhinorrhoea, and meningitis. The surgeon confronted with a sutured wound over the frontal sinus a day or two after its infliction may find himself in great difficulty, being uncertain how to proceed with the possibility of an already established frontal sinusitis and a possibly open cranial cavity.

Wounds of the Neck and Cut Throat

Wounds of the neck should be treated on the lines indicated for the face. Skin stitches that include the platysma, properly applied without excessive tension, give narrow scars that are almost invisible.

Suicidal cut throat is the result of a wound usually made with the right hand, and is thus more extensive on the left side than on the right. The vigour of the suicide is apt to be spent in the length of his incision rather than its depth, and the level chosen is often that of the thyro-hyoid membrane, presumably because the thyroid cartilage can easily be felt as an obviously resistant structure under the skin. Less often the wound is made above the hyoid bone, and rarely it is below the cricoid cartilage. In half-hearted attempts such wounds may be superficial only, but often they penetrate the air passages, in the common subhyoid variety opening the supraglottic part of the larynx, while in the less common suprahyoid wound the vallecula is penetrated; in either case the epiglottis often suffers partial or complete separation. In the subcricoid variety the trachea may be opened. These are the injuries actually inflicted as a rule, though the object of the suicide is presumably to open a large blood vessel in the neck. In the first two varieties, owing to the backward passage of the carotid sheath as it ascends the neck, its contents are in little danger; nor are the superior thyroid, lingual, and external maxillary vessels, though these are nearer the site of injury. Actually the large vessel damaged most frequently, in my experience, is the common facial vein, from which it is possible for a patient to become almost exsanguinated, but in a low wound the thyroid gland and the jugular vein may be involved. Nevertheless the brunt of the injury usually falls on the respiratory passages rather than on the vessels, at any rate in the cases arriving in hospital. An example of this occurred during the great war, when a soldier at the end of his endurance cut his throat one evening and reported sick in the morning holding a towel to his neck. He had divided his epiglottis and had incised his posterior pharyngeal wall, but there was not a great deal of bleeding.

When the thyro-hyoid membrane is cut the gash does not open widely, but in suprahyoid wounds the suspension of the larynx is partly lost, so that the wound gapes and the interior of the oropharynx can easily be inspected. Whichever level is chosen for cutting there is danger of asphyxiation from blood or loose fragments of epiglottis and laryngeal mucosa entering and obstructing the airway.

TREATMENT

With a closed respiratory passage the superficial wound is treated by ligation of whatever vessels may be necessary and by closure of the wound as described for other neck wounds. It is usually well to drain the deepest part, and this as a rule is in the middle line. With an open pharynx or larynx an anaesthetic is necessary, and when respiration is obstructed preliminary tracheotomy should be performed without hesitation. The upper opening can then be packed with a cocainized plug and the wound closed deliberately. The first step is the inspection of the interior of the pharynx or larynx and the removal of any loose fragments likely to cause suppuration or obstruct the airway. The epiglottis may be sutured, or if it is so badly lacerated that healing seems unlikely it may be removed with no fear of deglutition difficulty other than a temporary one. Swallowing, indeed, is impossible in any case in the early days after pharyngeal suture, and before closing the wound a catheter must be passed into the oesophagus and brought out through the mouth, where it is fixed by a suture through the cheek or a loop round the auricle. The pharyngeal mucosa is then closed with catgut, but the skin is left widely open except where there is no underlying pharyngeal wound. Closure of the skin carries with it a danger of infection of the fascial planes of the neck from the opened pharynx. If a tracheotomy tube has been used it may with advantage be left in place for a few days until it is certain that there is not enough inflammatory swelling of the upper opening of the larynx to obstruct respiration. A damaged trachea may be closed if not lacerated, after adequate exposure of the operative field, preferably under local analgesia with cocainization of the tracheal mucosa. If

the condition of the trachea be thought unsuitable for suture, a tracheotomy tube should be inserted for a few days, the wound being left open and packed with a small plug round the tracheal opening. This will suffice to prevent infection tracking in the fascial planes to the mediastinum, and the plug may be removed when a layer of protective granulations is well esablished. In no circumstances should a sutured trachea be covered by a closed skin wound, as not only distressing surgical emphysema but also widespread infection of the neck is the likely consequence.

RESULTS

Pharyngeal and tracheal wounds usually suppurate for a time, especially if there has been loss of blood; this, if severe, may be replaced by transfusion, should it be thought advisable to take healthy blood to revivify a suicide. Often a temporary pharyngeal fistula occurs, but such openings eventually heal of their own accord in most cases. If healing fails, a small plastic closure is easily effected when the fistulous track is completely covered with epithelium.

TREATMENT OF SYPHILIS

A SURVEY OF CURRENT METHODS

W. R. Snodgrass and R. J. Peters,[1] under the auspices of the Medical Research Council, have undertaken a survey of the results of treatment of early, latent, and mucocutaneous tertiary syphilis. Their report shows not only how these forms of syphilis should be treated but also what results may be expected from treatment—adequate or inadequate—begun in the various stages of the disease. Early syphilis can usually be treated according to a set plan of standard "courses," each of which should consist of not less than 5 grammes of "914" and about 2 to 2.6 grammes of bismuth metal, the whole being given over a period not exceeding fifteen weeks. Treatment is most effective when given early, regularly, and adequately; clinical relapse was noted in only 2.8 per cent. of the adequately treated cases as against 8 per cent. of the inadequately treated. It is the first course which is important, for of the cases receiving total adequate treatment those who had had an adequate first course showed a much lower relapse rate than those whose first course had been inadequate. In general, for early syphilis one standard course after the Wassermann reaction has become negative represents optimum treatment. An intensive first course gives the best results, and the intervals between courses should be reduced to a minimum. It is claimed that the author's intermittent concurrent use of "914" and bismuth gives at least as good results as the continuous alternating method recommended by the American Co-operative Clinical Group. Examination of the cerebrospinal fluid would seem to be unnecessary in the absence of symptoms referable to the central nervous system appearing before the end of the second year.

Intolerance is one of the bugbears of antisyphilitic therapy and a frequent cause of defaulting and inadequate treatment. Specific measures for avoiding it are lacking, but care in the preparation of the patient, especially the detection and elimination of focal sepsis, and in the technique of injection, will reduce its incidence. Jaundice occurred in twenty-three cases (4 per cent.) in the series, in twenty-two of these during the first course, but in only three was it severe; one patient died of acute yellow atrophy of the liver. Only thirty-six of 7,355 injections (0.49 per cent.) provided skin reactions, which in six cases amounted to dermatitis. Though it often lessens the total amount of treatment, intolerance often coincides with maximum therapeutic results. Thus 11.4 per cent. of unfavourable final results were recorded in cases showing intolerance as against 19.7 per cent. in cases not showing intolerance out of a total of 570 cases.

[1] Snodgrass, W. R., and Peters, R. J. *An Analysis of the Results of Treatment of Early, Latent, and Mucocutaneous Tertiary Syphilis.* Medical Research Council Special Report Series, No. 224. Price 2s. net. London: His Majesty's Stationery Office. 1937.

Latent and Tertiary Syphilis

Latent syphilis is defined as syphilis of more than two years' duration with no clinical signs but showing a positive blood reaction. The question arises as to whether such a case should be treated. The answer is that it should, because treatment lessens the incidence of late syphilitic lesions, may prevent conjugal infection by way of the spermatic fluid, and prevents hereditary syphilis. Of the cases under review treated and observed for more than two years clinical and serological tests were negative in 50 per cent. at the end of that time, in contrast with 27.9 per cent. in Brunsgaard's series of untreated cases (*Arch. Derm. Syph.*, Wien., 157, 309); the former figure agrees fairly closely with that of the combined American clinics. The treatment of latent syphilis is much more unsatisfactory than that of early syphilis, though the earlier the case comes under treatment the better the outlook. In general, three standard courses were considered sufficient for cases of latent syphilis, though in the case of a patient under 40 whose blood test is still positive after two years it is worth while continuing treatment even further, since this series showed 5 per cent. of clinical relapses after the two years' treatment and observation.

Tertiary mucocutaneous syphilis, like the latent form, responds better the earlier it is treated. Visible lesions heal rapidly, and in few cases is there progression to cardiovascular syphilis or neurosyphilis. Clinical skin relapse was seen in only 2.1 per cent. of this series—that is, it was practically unknown when adequate initial treatment was given—but intolerance is more common than in early syphilis (44 per cent. as against 27.7 per cent.) and rises with the age of the patient. This and the fact that two years' treatment and observation only produce negative Wassermann reactions in 37.2 per cent. of patients suggest that it is not usually wise to give long and intensive treatment unless the patient is young and healthy. In such cases many think it is an advantage to employ a quantitative serum test—such as the "Sigma"—which records results in units—and, provided the patient stands treatment well, persevere so long as the blood reaction continues to fall. Generally speaking, it was found that two courses of "914" (11.7 grammes) and thirty injections of bismuth (7 to 8 grammes) with potassium iodide orally afforded a very considerable means of protection against clinical or serological relapse. It is doubtful if one can speak of "cure" of any form of late syphilis; even if treatment reduces the blood reaction to negative and the patient is clinically free from symptoms he or she ought to be kept under observation indefinitely. Syphilis of the heart and blood vessels and of the nervous system have not been considered, since in the series under review too few cases were observed to warrant analysis.

Treatment of Early Syphilis

Finally, Snodgrass and Peters offer some suggestions on the treatment of early syphilis. The rate of serological relapse is the best single criterion of the value of a drug, if only because its incidence is nearly four times as great as that of clinical relapse. Research on intolerance is much needed, and the question of defaulting looms large, for obviously the more the cases default the worse will be the end-results. Bismuth and "914" appear to be the drugs of choice, and much depends on an adequate first course. It is therefore well worth while making this course as intensive as possible. In the first forty-seven

days of the scheme outlined by the two authors 5.55 grammes of "914" and 2.6 grammes of bismuth may be given, the first six injections of each being administered twice weekly. Then one month's rest is followed by eight weekly injections of calomel cream with potassium iodide orally. After a further month's rest the combined course is repeated, and then six weeks' rest is followed by ten weekly injections of calomel cream, potassium iodide being taken again orally. After this, two months' rest is allowed before a third combined course. One more combined course should be given after the blood Wassermann has become negative. Thereafter observation, repeated serological tests, and short courses of bismuth or mercury are continued until the end of the second year, when the cerebrospinal fluid should be examined.

Why the authors recommend such treatment is not clear, especially in view of the pronouncements of the League of Nations' experts, who laid down two tried methods—one the "intermittent" and the other the "continuous." If the League of Nations' "intermittent" method was adopted generally it would secure continuity of treatment for those patients who travel about. The scheme suggested by Snodgrass and Peters is open to criticism on the grounds that it has not yet been tried, that the intervals between courses of arsenic and bismuth are prolonged, and that possibly patients might not tolerate well ten or twelve weekly injections of calomel cream, admittedly a somewhat painful remedy. Now that there is in existence a really authoritative statement as to what is the best way to treat early syphilis, it seems a pity to confuse the issue by suggesting a totally different plan, however good it may eventually turn out to be.

Nova et Vetera

JOHN SHAW BILLINGS, 1838-1913

Bibliographer and Librarian

A quarter of a century has passed since Billings's death, and the echo of eulogy has scarcely died away. Many of those whose tributes were at the time so moving and so eloquent have followed him into the silence. Meanwhile a century has gone full circle, and once again the huge overpowering figure of John Shaw Billings rises before us. To a new generation his features are those of a stranger, and his claims on its remembrance and gratitude must hence be stated afresh. In his life he played many parts and played them well. As virtual creator of the Library of the Surgeon-General of the United States Army he fails to impress the medical student's imagination in this country, so misleading is the official title of the foremost medical library in the world.

Monumental Achievements

After the Civil War Billings in 1864 was transferred to the Surgeon-General's Office in the War Department, where he remained for thirty years. From a negligible nucleus—in 1865 there were about 1,800 volumes—he built the great library as we know it to-day. By 1880 he had collected 50,000 volumes and 60,000 pamphlets, and in 1895, when he retired, there were over 300,000 volumes and pamphlets and more than 4,000 portraits. In the early days he had no trained assistants, having to rely on hospital orderlies who had served in the Civil War. The work they accomplished is a tribute to Billings's organizing talent. To appreciate the development of his conception of the library as not only a vast storehouse of knowledge but as a dynamic instrument of precision for increasing knowledge and for aiding research, we must go back to his student days. For the doctorate at the Medical College of Ohio at Cincinnati a thesis was required. Billings took as his subject "The Surgical Treatment of Epilepsy." The twenty-two-year-old student was impressed by the lack of an efficient medical library in North America and of a reliable and comprehensive index to the medical literature. What others might have accepted with regret and resignation Billings translated into a vision of the future, where by sheer force of personality he made it come to life. His thesis, then, was responsible for those monumental bibliographic achievements, the *Index Catalogue of the Library of the Surgeon-General's Office* and the monthly *Index Medicus*. With the former he was in a way lucky, for its publication was financed by the Government, and it is now in its fourth series but the latter had to pass through troubled waters before it became finally merged in 1927 with the *Quarterly Cumulative Index Medicus* of the American Medical Association. The story of the Army Medical Library (before 1922 called the Library of the Surgeon-General's Office) has recently been told by Major E. E. Hume in the *Johns Hopkins Alumni Magazine*, January, 1936, **24**, 107–35, and by Colonel H. W. Jones in *Hospitals*, January, 1937, **11**, 14–21. The development of the library and its catalogue to Professor William H. Welch was America's most important contribution to medicine, and their father he described as the wisest man he had ever known.

A Versatile Character

One of the most versatile men of his generation, Billings was librarian, bibliographer, administrator, historian, and authority on public health. At one time there was scarcely a hospital of importance in the United States on the construction or rebuilding of which his advice was not sought or accepted. He helped to design the Johns Hopkins Hospital at Baltimore, and suggested the appointment of Osler, Welch, and Halsted to its staff. Retiring at his own request from the Army Medical Library at the age of 57, he became first director of the New York Public Library.

Big both in mind and body, Billings came of Scandinavian stock, and the blood of the Norse Viking fighters was in his veins. That a man of his strength of will and emphatic confidence in his own counsel antagonized those who did not penetrate below the austere surface of the dictator is natural, but at the same time his exuberantly masculine personality made a host of friends by unexpected acts of simple kindness, by his fairness, and his sincerity. As he grew older he became perhaps more mellow and kindlier in manner without sacrificing one ounce of his virility. His capacity for work was unbelievable, and he attended to the duties of the day with military promptness, seizing upon the essentials. His memory Weir Mitchell compared with the index of a vast mental library. Impatient with verbosity and pretence, Billings's style was clear, precise, forcible, and full of grim humour. Recreation he obtained simply by turning from one form of brain work to another. Books were his true and constant friends. The modern English authors he knew and liked, while his favourite reading was Job, Faust, and Shakespeare. Suffering terribly from insomnia—in his last twenty years he underwent eight operations for cancer of the lip and for calculi—he as a rule read one or two novels at night as "the best of soporifics."

Billings has set a standard in medical librarianship which makes the medically qualified librarian play an indispensable part in medicine's daily work. On the occasion of his hundredth birthday—April 12, 1938—it is a matter for regret to find that in this country at least, which is the proud guardian of some of the finest medical libraries in the world, his ideal, both financially and intellectually, remains yet to be captured.

W. R. B.

THE SION COLLEGE LIBRARY OF MEDICAL BOOKS

The president and governors of Sion College, London, have decided to sell a large section of the library under their control in order to have funds for the preservation of other sections which they wish to retain. In making their selection for this discard they naturally pick out those books which appear to be, and to have been, of least use to the Fellows and Members, and thus it happens that a very large collection of rare books on medicine and surgery is being sold by auction on behalf of the College on April 21 at Messrs. Hodgson's in Chancery Lane. Many of these books were left to the College in two bequests: Dr. John Lawson bequeathed a library in 1705, and Archdeacon Edward Waple another in 1712. Lawson was President of the Royal College of Physicians in 1694 and an eminent practitioner in London; he was a friend of Archbishop Tenison, on whose account he desired to benefit Sion College. Owing to disuse many of the bindings have deteriorated and most of the covers are broken; the folio volumes have also suffered water-stains, caused during an overflow of the Thames long ago. Otherwise they are in good condition. Many of the books, though old and rather uncommon, are not of the superlative age or rarity that means fancy figures in the sale room: it is possible here to particularize only a select few out of the many hundreds that are catalogued for disposal.

Some Rarities

First must be mentioned a copy of the extremely rare first edition of Harvey's *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*, Frankfurt, 1628, lacking (as many of the extant copies lack) the errata leaf and the blank leaf which constitute signature K—proof that the errata leaf has not been torn out but that this copy was of an early printing; and there is also a first edition of the same author's *De Generatione Animalium*, 1651. Another great rarity is Dr. Thomas Bonham's *The Chyrurgian's Closet*, 1630, "Furnished with varietie and choyce of Apophlegms, Balmes, Baths, Caps, Dentifrices, Gargarismes, Pils, Quilts, Synapismes, Trochisces . . . for the help and ease of young Practitioners in the Noble Science of Chyrurgerie." Just before this in the catalogue is E. Roesslin's *The Birth of Man-Kinde*, edited by T. Raynald, 1626, the first illustrated treatise on midwifery in English. Even rarer is Alexander Read's *Treatise of all the Muscules of the whole Bodie*, 1637, possibly the only copy in existence. Glisson's *Treatise of the Rickets* (translation), 1651, is the first edition in English of that medical classic.

Of the ancient masters, there are seven editions of Galen—1538, 1625, 1537, 1546, 1530, 1544, and 1586; two of Paulus Aegineta—1538, 1556; one of John Gaddesden—1516; and five of Hippocrates. Alexis of Piedmont is represented by an edition of 1568 and Andrew Boorde's *Brevyary of Health* by one of 1552. Another interesting book is a second edition (1580) of Monardes's *Joyfull Newes out of the Newfound World*, "wherein are declared the rare vertues of divers Herbs, Trees, Oyles, Plants, and Stones" (of the West Indies), "Englished by John Frampton": in this book the curious will find an account of the properties of tobacco, the medicinal uses of iron, and a suggestion of the use of snow for preserving perishable commodities by a species of refrigeration.

Sydenham, Willis, Bartholin, Vicary, Lettsom, Hunter, Boerhaave, Mead, Smellie, Bell, Cooper, Bright, are familiar names which catch the eye further on; and there are a few items dealing with the early history of the London Hospital, St. George's Hospital, the Royal Infirmary, Edinburgh, and the Bath Hospital.

INTERNATIONAL CONFERENCE ON RHEUMATIC DISEASES

FOUR-DAY MEETING AT BATH

The International Conference on Rheumatic Diseases, which was held at Bath from March 31 to April 3, was attended by members from thirteen European countries, the United States, Canada, and Egypt. It followed immediately upon the International Congress on Rheumatism and Hydrology at Oxford, and was held in connexion with the bicentenary of the Bath Royal National Hospital, formerly known as the Mineral Water Hospital. Bath once again showered upon its visitors its usual hospitality, and the civic reception by the Mayor at the Pump Room and the banquet given at the Guildhall, also by invitation of the City, were noteworthy events, even in a place accustomed to generous and dignified entertainment.

The Empire Rheumatism Council

Lord HORDER, who was President of the Conference, delivered a brief address on the evening of assembly. He said that 1938 was a distinctive year in the war against rheumatism, because it marked the bicentenary of the Bath Hospital, the holding of the recent congress at Oxford, and the establishment of the Empire Rheumatism Council. Throughout his medical life, said Lord Horder, he had always kept the problems of rheumatic disease in the front of his mind, and had come to the conviction that there should be a methodical investigation into every possible factor connected with causation and treatment. Now they had an organization fitted to carry out such investigation. It had already become active; it had set up three research units, and had made promising progress in the matter of systematizing and extending therapeutic treatment. He felt that in the future its work would bring about a notable diminution in rheumatic disease, and its foundation prove a conspicuous landmark in public health history.

The toll which rheumatic disease exacted from industry could only be estimated from the fact that about 400,000 insured workers in England and Wales were ill from some form of the disease every year to the extent of being unable for the time being to follow their occupations. The total number of sufferers, insured and non-insured, was at least a million. The British spas treated only some 5,000 cases annually among the poorer class of those suffering from rheumatic disease. The problem of extending the use of the spas among the well-to-do was a matter for their own publicity organizations, but the problem of making spa treatment more widely available to the poorer class was somewhat different. The chief suggestions at present being explored were the provision of hostels and of approved boarding houses, subjected to a certain degree of medical control, at spa centres. In both these respects the Empire Rheumatism Council could usefully help by educating the medical profession and by impressing upon public health authorities the value of spa treatment.

Gout and Rheumatism of Metabolic Origin

The principal discussion at the Conference was on gout. It occupied a whole day, and Professor F. R. FRASER presided over the opening session. He said that there had been no therapeutic advance in the study of gout since Wollaston in 1797 observed that gouty concretions contained urates, an observation which directed attention to nitrogen metabolism in the causation of gout. Since the beginning of this century, however, biochemists had unravelled so much with regard to protein metabolism that the clue to the pathology of gout seemed to be lying before them unrecognized. That gout had a causal relation to both acute and chronic arthritis was generally accepted, but the mechanism of that relation was still

quite unsolved and the factors that determined the type and distribution of arthritis and of non-articular rheumatism in the individuals who suffered from gout were also unknown. If the answers to these questions could be given the key to many mysteries in the whole field of arthritis and of rheumatism in general would be forthcoming.

Sir WALTER LANGDON-BROWN, in an opening paper, said that the diminished incidence of gout had naturally led to a diminished interest in the subject. The last time he saw any considerable number of cases of gout was in 1919, when war-time food restrictions were removed; apparently some predisposed individuals had lost their tolerance for a full diet. Some of the diminished incidence was only apparent, and was explained by more accurate diagnosis and the application of more exacting criteria. *X*-ray examination had shown that cases of alleged gout might be of other forms of arthritis, and the alarming cases of so-called "suppressed" gout were now generally regarded as due to uraemia or myocardial failure. Sir Walter entered upon a consideration of the evolution of nitrogenous excretion in human beings and the factors in the deposition of urates in the tissues. He concluded that some persons suffered from a congenital or acquired difficulty in disposing of their nuclein derivatives, the difficulty being not of destroying but of eliminating purins, possibly due to the loss of power to conjugate them suitably. This led to such an excess of uric acid in the blood that a low-grade arthritis was fanned into intense flame by the deposit of irritating biurate crystals in a structure already involved.

Just as the essential pathology of gout remained obscure, its treatment by colchicum remained quite empirical. In large doses it was an irritant poison, yet, although powerless to avert an attack, its influence on the pain and swelling of an acute gouty joint was often dramatic. Except for the introduction of cinchophen in 1908 there had been no major change in the treatment of gout since the value of colchicum was established in the sixteenth century. The most serious risk of cinchophen was the danger of toxic jaundice. Twelve years ago he reported two fatal cases following the continued administration of some cinchophen preparations. When certain safeguards, however, were observed, such as had been worked out by Graham—who showed that if the drug were given in doses of 7½ grains three times a day for only two consecutive days in each week the total increase in the output of uric acid was as great as from continued administration and toxic effects were not encountered—there was no reason why patients should be deprived of its undoubted benefits.

Dr. MATHIEU-PIERRE WEIL (Paris) followed with a paper on the same lines. The attack of gout, he said, did not manifest itself constantly by hyperuricaemia. The part played by disturbances in the metabolism of uric acid had in any case been greatly exaggerated. An immoderate alcoholic intake, cold, physical fatigue, moral indiscretion, traumatism, simple muscular or even intellectual effort were, to the individual who was predisposed, more likely to be generators of an attack than the absorption of sweetbread, spinach, or cocoa. The speaker discussed generalized acute and chronic "rheumatism of a gouty nature," also mono-arthritis of a similar type, which, he said, was far from being exceptional, and he concluded by quoting a remark that between gout and rheumatism there was the distance that separated the admiral from the first mate. "Gouty rheumatism" constituted the intermediate ranks; of recent times the admirals had become scarcer, but the first mates had multiplied.

"Gouty Rheumatism"

In the course of discussion Dr. J. FORESTIER (Aix-les-Bains) took exception to his compatriot's category of gouty rheumatism. Words, he said, were important in medicine because they tended to direct the therapeutic measures. In France there had been a tendency to regard any patient over 40 with a chronic condition as suffering from gout if there were tophi, and from "gouty rheumatism" if there were not. Dr. E. P. POULTON took up Sir Walter Langdon-Brown's remark that the diagnosis of the gouty diathesis was certain in the presence of a blood uric acid above 3.6 mg. per cent. and of tophi. He had a patient under his care with blood uric acid of 3.8 who was entirely free from gout. Dr. SCHNEIDER (France) drew attention to the peculiar intestinal symptoms which, he said, were found in 80 or 90 per cent. of gout cases—namely, a special type of colitis without serious irritation of the intestinal lining.

Sir WILLIAM WILLCOX said that since the war dietetic and metabolic factors had played a smaller part than formerly in the aetiology of gout. It had been his experience in recent years that focal sepsis and toxic factors had a good deal to do with gout causation. "Poor man's gout" was often associated with infection. The threshold of uric acid in gouty subjects was very different from what it was in normal persons, and this fact might be of great importance in determining the deposition of urate crystals. With regard to the possible dangers of cinchophen, or atophan as it was sometimes called, it was important to bear in mind that tolerance diminished with increasing years. It had been his experience that the danger of cinchophen was much enhanced in elderly people. He had seen five grains three times a day taken every day for a week prove fatal in elderly patients. The danger was in the effect on the liver, causing degeneration of the liver cells and toxic jaundice, and they were indebted to Graham for his wise advice that cinchophen should be taken for two days only and then withheld, to be repeated later if necessary.

Dr. C. W. BUCKLEY (Buxton) protested against the assumption that the rarefaction of bones in the region of the joints would enable either rheumatism or gout to be diagnosed. He thought a clear idea of gout was only to be obtained by proceeding from the basic proposition that gout was a disease characterized by excessive uric acid in the blood and its deposition in the tissues. It was easy to prove the excess of uric acid in the blood, not so easy to prove its deposition in the tissues; but if such deposition took place then local necrotic changes occurred which were the bases of the production of the symptoms of chronic gout. He believed an attack of acute gout to be an allergic manifestation; there was a pre-existing deposition of urates in the tissues, and owing to some, probably seasonal, variation in the metabolism of purin bodies a reaction was set up with characteristic symptoms, sometimes constitutional as well as local.

An Analysis of Gout Cases

Dr. LESLIE C. HILL (Buxton) gave a critical survey of ninety-three cases of gout treated during the last three years. A family history of gout was elicited in 45 per cent. of the cases and of fibrositis in a further 15 per cent. No one particular occupation stood out prominently, though the relatively high proportion of publicans supported the orthodox attitude towards alcohol as a factor in causation. Only three of the women patients (twenty-one out of the ninety three) showed symptoms before the menopause. Articular gout was diagnosed in 61 per cent., abarticular gout in 16 per cent., mixed gout in 22 per cent. In more than one-half of the male cases the onset was sudden; in women gradual onset was more common. Most of the initial attacks occurred at night. Spring was by far the commonest season for acute attacks; autumn a poor second. In about 90 per cent. of the cases the blood uric acid was 4.5 mg. per 100 c.cm. of blood or over. The association of gout with glycosuria was noted by its absence in this series. He concluded that as the group of abarticular and mixed gout showed the same aetiological, clinical, and biochemical features and the same

WILLIAM E. GAUNT, JAMES T. IRVING, AND WILLIAM THOMSON: CALCIUM AND PHOSPHORUS DEFICIENCIES IN A POOR HUMAN DIETARY

FIG. 1. Group 1.

FIG. 2. Group 2.

FIG. 3. Group 3.

Seventy-day female litter mates (first generation). Note poor calcification in Group 1, good calcification in Groups 2 and 3.

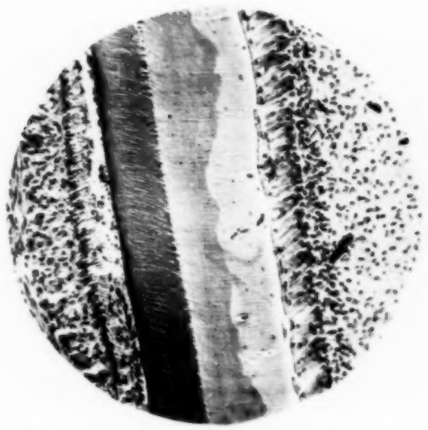


FIG. 4. Group 1.—Tooth ash 77·15 per cent.; bone ash 44·62 per cent.

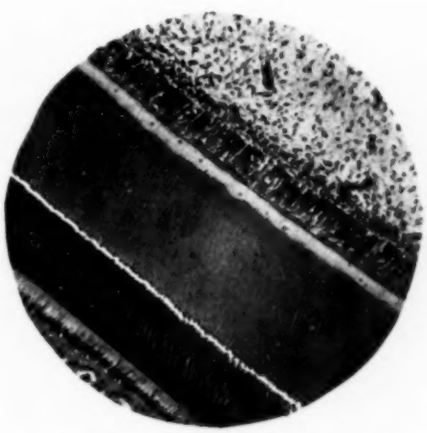


FIG. 5. Group 2.—Tooth ash 78·29 per cent.; bone ash 56·12 per cent.

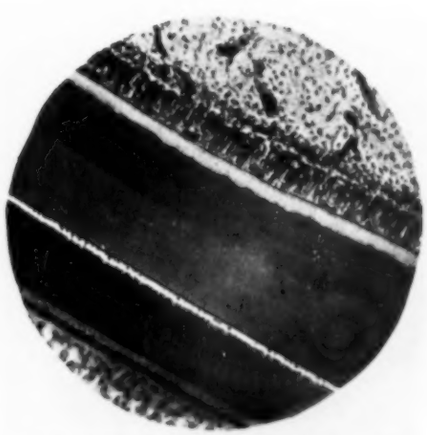


FIG. 6. Group 3.—Tooth ash 77·38 per cent.; bone ash 56·89 per cent.

Longitudinal sections of the apical region of the upper incisor teeth of seventy-day male litter mates (× 100). Note that the predentin is wide in Group 1, narrow in Groups 2 and 3 (17 μ); there are vascular inclusions and an irregular calcification line in Group 1, no inclusions and a regular calcification line in Groups 2 and 3.

H. A. BRITTAIN: FRACTURE OF THE NECK OF THE FEMUR

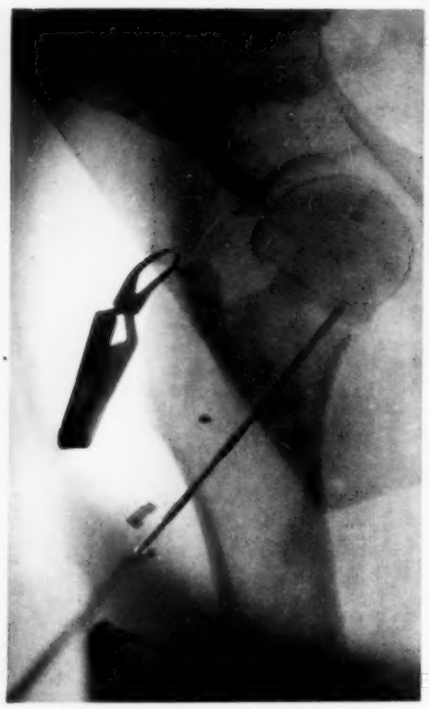


FIG. 1.—Antero-posterior view of Michel clips and guide in position.

FIG. 2.—Lateral view, showing guide in front of neck and Michel clips behind.

FIG. 3.—Pertrochanteric fracture treated by long nail.

FIG. 4.—Abduction fracture, in patient aged 51, with slight displacement; treated by rest in bed only.

FIG. 5.—The same patient six years later, showing degenerative arthritis; treated by arthrodesis.

FIG. 6.—Bilateral nailing in a patient aged 68. Fracture of right femur three years ago; nail inserted by open operation. Fracture of left femur eighteen months ago; nail inserted by closed method. This patient has full movement in both hips and walks without pain in either limb.

FRANK STABLER: EXTRA-UTERINE GESTATION: LIVE CHILD

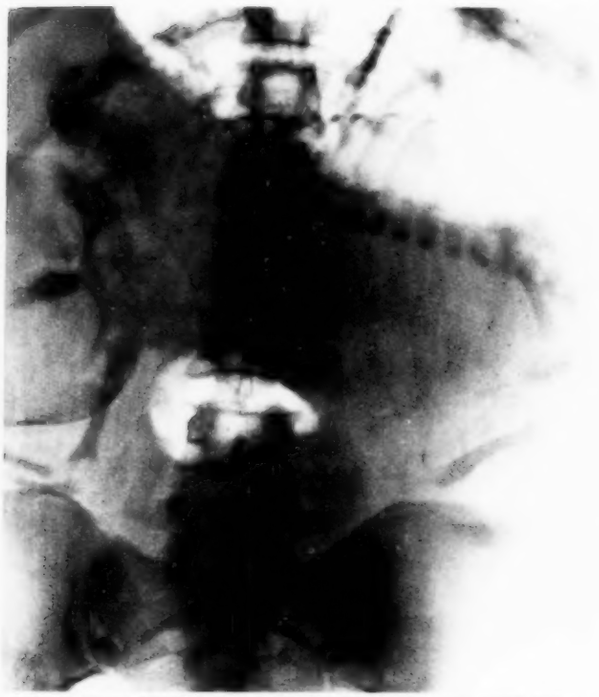


FIG. 1.—Antero-posterior view of extra-uterine thirty-seven weeks foetus.

FIG. 2.—Lateral view. Note shadow presumably due to mass of bismuth in rectum.

JAMES MAXWELL: SPONTANEOUS HAEMOPNEUMOTHORAX

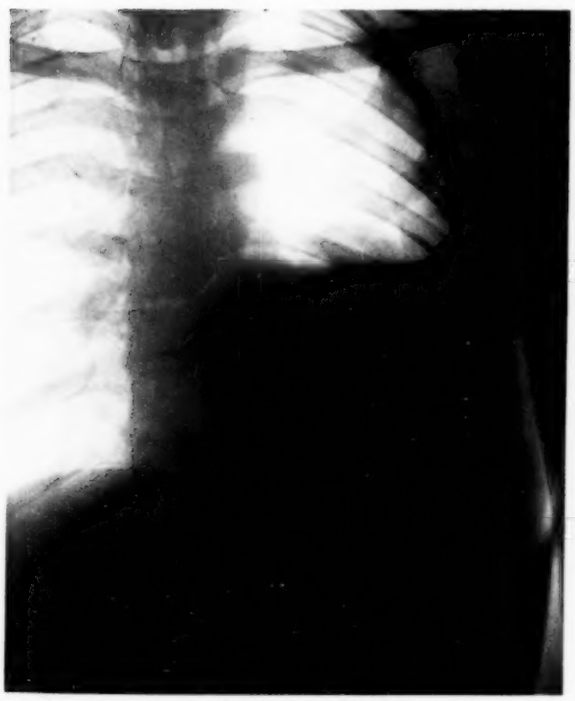


FIG. 1.—Left-sided pneumothorax, with fluid level (September 1, 1937).

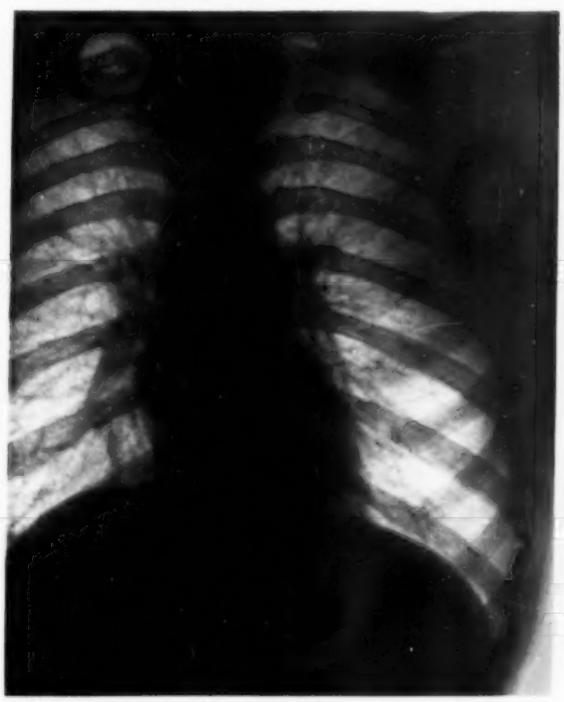


FIG. 2.—The lung appears normal and the costo-phrenic sinus is quite clear (September 29, 1937).

T. H. BOON: COMPLICATIONS OF GOLD THERAPY

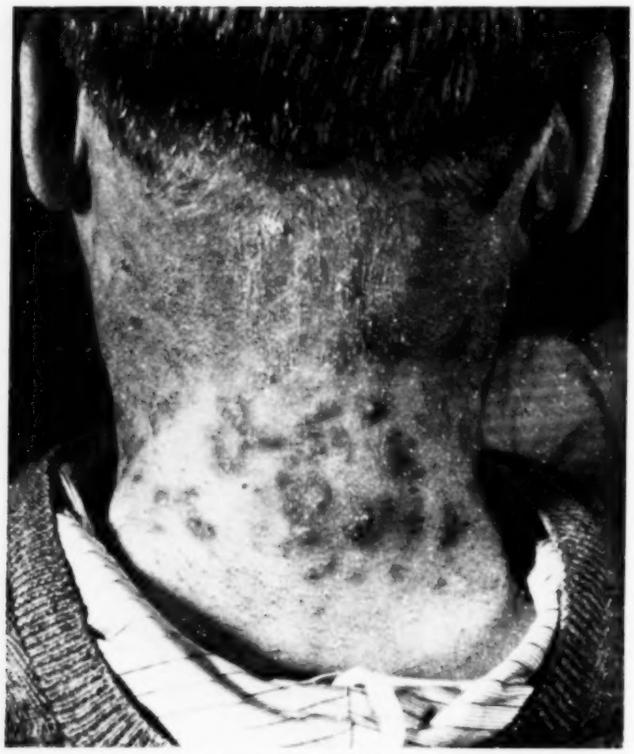
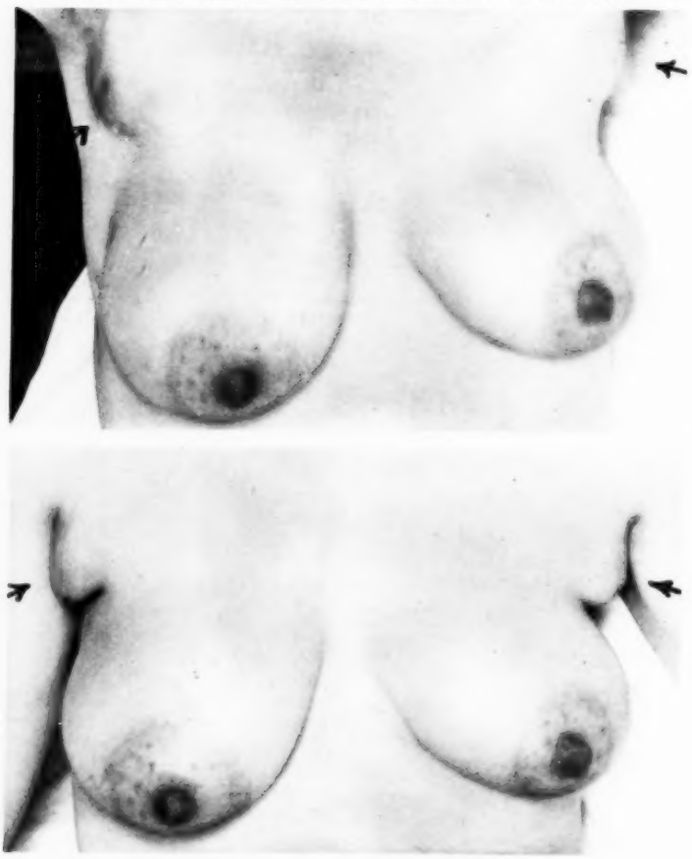


FIG 1.—Condition of back of neck.

FIG. 2.—Condition of patient's nails.

R. G. PROSSER EVANS: MALIGNANT TUMOUR OF THYMUS

M. CHRISTIE: BILATERAL AXILLARY BREASTS



therapeutic response as the more classical varieties, there appeared to be no reason to deny a gouty basis for the fibrositis seen in these cases.

Dr. HUBERT GIBSON and Dr. G. D. KERSLEY (Bath) presented a clinical and pathological study of a series of cases. Of fifty-four cases of true gout, 24 per cent. had a family history of the same condition. Acute onset with complete intermission occurred in 75 per cent., the onset following injury, infection, or worry, sometimes the ingestion of particular foods and drinks. The age of onset was most frequently between 30 and 40. Only 24 per cent. had tophi. Clinically there were cases grading off into other types of rheumatism, suggesting that gout was more a syndrome than a disease. After discussing the pathological findings, Dr. Gibson gave it as his opinion that by a consideration of the erythrocyte sedimentation rate, the polymorphonuclear neutrophil percentage, the red-cell volume, and the formol-gel test, chronic rheumatic diseases could be placed in the following order of their deviations from normality: (1) fibrositis, (2) osteoarthritis, (3) gout, (4) the "gouty basis" group, (5) rheumatoid arthritis, (6) spondylitis ankylopoietica. Dr. Kersley, who had undertaken the clinical part of the investigation, said that the criticism would probably be that a number of cases were included which were not true gout.

In some general discussion Dr. NAJIB-FARAH (Alexandria) said that gout was a definite entity, tending to disappear with a healthier regime and more physical exercise, while "rheumatism of metabolic origin" was a vague generic expression including many factors concerned with intoxication. Dr. FLORENT COSTE (Paris) pointed out how greatly the incidence and clinical character of gout varied from country to country. One point on which the textbooks had made a mistake was in associating the disease with constipation. It was much more often associated with an irritable colon and frequent and urgent motions.

Dr. JOSEPH RACE (Buxton) remarked on certain differences between gout and rheumatoid diseases in general from the point of view of heredity and of geography. For example, rheumatoid disease was just as prevalent north of the Tweed as south, but gout north of the Tweed was practically non-existent. Dr. DOUGLAS COLLINS (Harrogate) said that he had aspirated the joint fluid from small and large joints at the stage of an acute gouty attack and had found it as full of polymorphonuclear cellular exudate as in any other kind of infective arthritis, except those in which there were actual organisms in the joints. The inflammation was the same as inflammation of any other kind. The reaction, if it occurred in the synovial tissues, gave rise to the proliferative changes which were to be expected, and therefore it was no matter of remark that the later stages in the histology of gouty arthritis and rheumatoid arthritis should be similar. Professor ANDRONESCU (Bucarest) called attention to the aetiological factor of insufficient respiration. Failure to breathe properly could be the basis of almost any morbid process, and should be considered in the aetiology of rheumatism.

Dr. R. J. WEISSENBACH (Paris) and Dr. F. FRANÇON (Aix-les-Bains) presented a paper on the radiographic aspect of gouty foot (the "thorn" foot). In the skiagram in profile the tarsus was spiked on its upper surface with osteoblastic protuberances, usually grouped two by two, forming a sort of crater. In the seven cases described the gout generally manifested itself in two or three annual typical attacks.

Incidence of Gout

At the second session of the Conference, presided over by Sir HUMPHRY ROLLESTON, several Continental workers gave their experience of gout. Dr. GUNNAR KAHLMETER (Stockholm) said that only twenty out of 1,000 rheumatic cases in the four great general hospitals of his city were cases of gout, and in fourteen years' private practice he had seen only seventy cases. Dr. J. VAN BREEMAN (Amsterdam) recalled the names of some famous men who had been afflicted with gout—Frederick the Great, Goethe, William Pitt, Sydenham, Kant among others. In nearly all countries the incidence of gout had declined, and when it did appear it was less severe. The modern physician was untrained to recognize its varieties, so that a number of sufferers never had their malady identified. In some countries cases of gout appeared to be manifested only by tophi; elsewhere there was severe gout without tophi.

A paper by Professor GERONNE (Wiesbaden) was read in his absence by his colleague, Dr. KUHNAU. He pointed out the connexion between gout and other metabolic disorders, especially those occurring round about the menopause. One metabolic disorder which should be considered in relation to gout was the imperfect digestion of fats. Another form of arthritis clearly metabolic was alkaptonuria. A connecting link between all these forms of arthritis was that they were hereditary in the same sense as gout. Another distinguished absentee whose paper was read in his absence was Dr. ERNST FREUND (Vienna), who contested the common view that gout was a familial disease. Out of 120 cases observed in ten years he had met with a familial factor in seven only. In 25 per cent. of cases of gout he had found kidney stones. During ten years he had seen eleven cases of true gout in women; all showed increased uric acid in the blood. Attacks of gout not seldom followed infections such as scarlet fever and diphtheria, in which cases an allergic reaction might be assumed. He had found a combination of gout and rheumatoid arthritis in a few cases, one of them a man of 53.

In further discussion Dr. PRICE (Bristol) described five cases of congestive heart failure in which patients had been put on salyrgan and ammonium chloride for oedema. A brisk diuresis followed, and each of the patients developed an attack of acute gout. Some of them gave a history of recurrent gout over a long period. A return of oedema and increasing signs of failure occurred after the gout attack, followed by death within a period of from one to six weeks.

Dr. J. FORESTIER (Aix-les-Bains) said that from statistics published by his grandfather in 1880 it appeared that out of 800 rheumatic cases he had had only seven cases of gout. His colleagues in Aix-les-Bains and himself found a similar proportion to-day. Not enough had been said about the influence of alcohol. Half or more than half the middle-class patients who came to him with gout were proprietors of saloons. Dr. PHILIP HENCH (Mayo Clinic) said that the chief diagnostic criteria were the characteristic patterns of the single and subsequent attacks and the response to treatment. The uric acid index and the presence of tophi were of less importance, and *x* rays were not of much help. Cinchophen was the subject of much controversy in the States. The truth appeared to be that some needed it and could not get along without it, while for others it had no value. Dr. E. P. POULTON said that his colleague, Dr. W. E. B. Lloyd, had found, in carrying out certain special methods of examination, that in an attack of gout there was a fall in the output of uric acid but a rise, out of all proportion to such fall, in the uric acid in the blood. Dr. RUPERT WATERHOUSE (Bath) referred to a Continental observation that the amount of uric acid in the tissues as estimated in the blood corpuscles and the amount in the plasma varied at different periods during an attack of gout—that is to say, the amount in the corpuscles diminished whilst that in the plasma increased. He had himself repeated this observation, and he showed the figures obtained.

Jaundice in Relation to Rheumatism

At the final session of the Conference, which was presided over by Sir WALTER LANGDON-BROWN, various unrelated subjects were taken. The one that excited most

discussion was jaundice in relation to rheumatism. Dr. PHILIP HENCH (Mayo Clinic) said that when patients with rheumatoid arthritis or primary fibrositis became jaundiced their rheumatic symptoms were rapidly, markedly, and generally completely alleviated for some weeks or months—a phenomenon casually mentioned by, among others, Wishart* (*British Medical Journal*, 1903 **1**, 252). Dr. Hench summarized his observations on thirty-one rheumatic patients who experienced the phenomenon and—of equal importance—on four patients with rheumatoid arthritis and nine with other types of articular and neuritic complaints who were not relieved. Symptomatic remissions lasting from 5 to 82 weeks occurred in nineteen cases of rheumatoid arthritis in which intrahepatic or obstructive jaundice lasted an average of nine weeks. Remissions lasting 4 to 104 weeks occurred in nine cases of fibrositis in which the jaundice lasted an average of 5.6 weeks. The degree of symptomatic relief was complete for all the fibrositic and for almost two-thirds of the arthritic patients. The remarks of the patients were significant: "When jaundice came in at the front door rheumatism went out at the back." "I would trade my rheumatism for jaundice any day." The phenomenon was apparently more dependent on the quantity than on the type of the jaundice. He added that there was no particular rationale for the use of "artificial jaundice" in rheumatic disease, but the history of the therapeutics of rheumatoid arthritis was full of the ghosts of "rational treatments" which should have helped but did not. In this instance, thanks to one of Nature's revealing "slips" or "tricks," a return to the empirical might be of use. The responsible agent and the mechanism whereby it operated had not, however, been identified. He described some work on induced hyperbilirubinemia; it was a rather crude and inconsistent approximation to the more dramatic and complete effect of spontaneous jaundice. It was by no means a "control of arthritis," nor was it a practical procedure, being expensive and inconstant. As a piece of research it had its promising features, but to exploit the use of bilirubin and bile salts for the treatment of arthritis at present was unwarranted and undesirable.

Dr. BARNES BURT (Bath) said that following a letter by Dr. E. A. Addison which appeared in the *British Medical Journal* a year ago, suggesting an explanation of epidemic jaundice—namely, the eating of Spanish chestnuts—he procured two sacks of this fruit and tried it on certain rheumatic patients. Unfortunately, the only person who developed jaundice at all was the sister in the ward! Professor VEIL (Jena) referred to a case in which the appearance of jaundice in the course of severe rheumatic fever complicated by meningitis was associated with a fall in the temperature and the disappearance of both the rheumatic and the meningitic symptoms. He thought the phenomenon could be traced back to something very fundamental that happened in the liver. Dr. NAJIB-FARAH (Alexandria) thought the explanation might be found in the bilirubin in the blood. In typhoid fever he had found the bilirubin low; in certain cases of rheumatic fever high. It was a defence mechanism constantly varying according to the nature of the invading organism to be overcome. Dr. JOSEPH RACE (Buxton) said that the clue might lie in comparing the remissions which occurred owing to jaundice and those which occurred during pregnancy. The only link appeared to be that bilirubin was a member of the same chemical group of substances in some others of which, in pregnancy, changes occurred; cholesterol was a member of the same group.

Circulation in Relation to Arthritis

Dr. RALPH PEMBERTON (Philadelphia) said that the widely prevalent view which attributed some of the symptoms of rheumatoid disease to disturbances of the peripheral circulation received support from much clinical and experimental data. Important consequences followed from the derangement of the circulation. After surveying the wide range of circulatory influences in arthritis, following the decreased rates of exchange of materials between the tissues and the blood as it passed through the periphery, Dr. Pemberton said that although therapy should not be directed primarily, or chiefly, to the circulatory deviations, such a consideration should be part of the broad attack which envisaged the patient as a whole, provided optimum conditions of rest and nutrition, and removed or controlled precipitating or contributory factors. He emphasized the importance of rest. "*Requiescat in pace* would do a great deal more good placed at the head of the patient's bed than on his tombstone."

Rheumatic Disease and the Voluntary System

The only discussion of a medico-political character took place on an address by Professor STANLEY DAVIDSON (Aberdeen) entitled "Can the Problem of Rheumatism be Solved by the Voluntary System?" In Scotland, he said, 14 per cent. of the invalidity of insured persons was due to rheumatic diseases, with a loss of three million working days a year. Recently he had ascertained certain figures as a result of a questionary to a number of practitioners in North-East Scotland with regard to the number of new cases. If their statistics were representative of the whole of Scotland and the month during which they were taken was representative of the whole year the annual number of new cases was 375,000, being 28,000 of rheumatic fever, acute and subacute, 24,000 of rheumatoid arthritis, 29,000 of osteoarthritis, and 294,000 of muscular rheumatism. The only real facilities available were treatment by general practitioners and in voluntary hospitals. All would agree that physiotherapy was needed at a certain stage in the treatment of rheumatism, but under national health insurance not even massage was provided, let alone more expensive forms of physiotherapy. Nobody would suggest that voluntary hospitals could supply the need. They had not an adequate number of men trained in physiotherapy, and many physicians on the staff of voluntary hospitals had little interest in the group of rheumatic diseases. In Scotland the radiologist was usually in charge of the physiotherapy department, and however good he might be as a radiologist he was frequently ignorant of rheumatism and the methods of treating it. The spas were relatively inaccessible to the large areas of working-class population. He pleaded for the provision by local or national authorities of rheumatic clinics in charge of specially trained full-time medical officers, and additional institutional accommodation where necessary. He added that this did not imply that the voluntary hospital system would not have an important part to play in collaboration with the municipal clinics.

Professor R. B. OSGOOD (chairman of the American Committee for the Control of Rheumatism) said that in Massachusetts, with a population of 4½ millions, chronic rheumatism led all other diseases as an economic, social, and medical problem. The legislature had at last consented to give a subsidy to existing voluntary institutions so that a certain number of beds might be provided for the study and treatment of rheumatic diseases. Dr. J. FORESTIER (secretary of the French League against Rheumatism) said that the League was now recognized as a medical society of public utility which might receive endowments and public grants. The French legislature provided facilities for the study of cancer, tuberculosis, and venereal disease, and now rheumatic diseases were being included in the same provision.

Miscellaneous Papers

Before the Conference ended three miscellaneous papers were presented under a "ten minutes rule." One, by

* In a short note Dr. John Wishart wrote: "When jaundice of an obstructive type becomes fully established in the system of a patient suffering from chronic rheumatism, rheumatoid arthritis, or muscular rheumatism the pains characteristic of these diseases disappear entirely.—ED., *B.M.J.*

Dr. LEVINTHAL (Bath), recounted certain serological investigations carried out in the research laboratory of the Royal National Hospital upon sensitization and immunity. Dr. W. S. C. COPEMAN described certain toxic reactions to gold injections. Skin lesions had attracted his attention most. These might take the form of an erythema, sometimes local and sometimes generalized, which in the more permanent lesions might become purpuric. Eosinophilia was an indication that a rash was likely to occur, but it was too late to be of any use. Dr. GERALD SLOT mentioned some work on the treatment of sciatica. He had found of considerable value the method worked out by Evans and others of epidural injections followed later by manipulation. Under evipan anaesthesia an epidural injection of novocain was given; normal saline might be used instead, but novocain induced a little less pain.

Civic Banquet

The Mayor of Bath (Captain Adrian Hopkins) entertained the members of the Conference to a banquet at the Guildhall, when the toast of "The Conference" was proposed by Mr. C. G. MACKAY, chairman of the Royal National Hospital, who described the developments which are impending whereby the hospital will be re-erected and extended close to the hot springs. The toast was supported by Dr. ALDRED-BROWN, who welcomed the visitors on behalf of the staff of the hospital and the medical profession of Bath.

Lord HORDER, in response, said that it was imperative that the hospital should be rebuilt at as early a date as possible. The conditions under which the medical staff did their work were wholly inadequate. There might be some people who questioned the right of the hospital to describe itself as "national," but in fact less than 4 per cent. of the admissions came from Bath and its immediate vicinity. The patients came from fifty different counties in Great Britain and Ireland. The amount received for the appeal fund stood at £65,000, but this was less than one-third of the total required. The lay-out of the new hospital was excellent, conforming to most, if not all, of the criteria by which he judged a modern hospital. A site would be available later for a paying patients' annex. No lay-out of a modern hospital should be passed which did not provide for those who had been called the "new poor."

Professor R. B. OSGOOD of Boston, U.S.A., who also responded, said that the exact causes of rheumatic diseases were still unknown or unproved, but the effect of many measures of relief, perhaps of control, was understood. It was the present task to discover and eliminate as many of the background causes as possible. Above all it must be remembered that each case presented an individual problem for which the individual physician must be responsible, also that orthopaedic surgery and physical therapy had an important part to play in the preservation of function; and, again, that there was work to be done on the neurological and psychological side. He found great encouragement in the present awakening of widespread interest in rheumatic diseases.

The historical and literary associations of Bath were eloquently woven into the speech of Sir WALTER LANGDON-BROWN in proposing the health of the hosts, and the MAYOR, in his reply, touched on the history of the beautiful hall in which the company had met and of the city plate which was prominently displayed. He also mentioned that in 1784 the number of physicians and surgeons practising in Bath was twenty-three, as against 107 to-day.

Before leaving Bath the visitors attended a well-arranged clinical meeting at the Royal National Hospital, when cases were shown by Dr. Aldred-Brown, Dr. J. B. Bennett, Dr. P. W. McKeag, Dr. J. Barnes Burt, Dr. G. D. Kersley, and Mr. C. E. Kindersley. A demonstration was also given of hydrological methods at the bathing establishment.

INTERNATIONAL CONGRESS ON RHEUMATISM AND HYDROLOGY

CONCLUSION OF OXFORD MEETING

The Oxford Congress, the first part of which was reported last week (p. 745), continued until March 31, when it was followed by the similar meeting at Bath. The whole of the later part of the proceedings was occupied with a discussion on juvenile rheumatism. The remarks of the openers have already been briefly summarized.

Juvenile Rheumatism: Pathological Aspects

Continuing on the pathological aspects, Dr. G. H. EAGLES (Lister Institute) said that while various agents had been suggested from time to time as the causal factor in rheumatism all of them left some element in causation unexplained. All the suggested organisms concerned, including streptococci, when tried experimentally on animals, failed to repeat the infection. Therefore it seemed reasonable to pursue the idea of a virus. The agglutination phenomenon was obtained with certain suspensions of virus-like particles in serum from rheumatic fever, rheumatoid arthritis, and chorea; but on inoculating monkeys with these suspensions some doubtful clinical signs were produced in only three out of a series of thirty-five. Post-mortem examination revealed what might have been an Aschoff node, but it could not be said that rheumatic fever had been produced in monkeys. The failure to obtain a clinical result despite the serological reaction might be explained either by supposing that these were not true virus particles or that they were virus particles but not capable of infectivity. "I do not want anybody to go away with the idea that I think a virus is the cause of rheumatism," said Dr. Eagles. "I do not know the cause—nor does anyone else."

Dr. W. H. BRADLEY, who had co-operated in the experiment, said that the agglutination phenomenon was a real one, capable of being observed and repeated. Dr. Bradley proceeded to describe a case furnishing some evidence that the apparent anaemia and pallor in rheumatic fever was due to an increase in plasma volume. Dr. A. C. LENDRUM (Glasgow) showed histological sections of the case of a woman aged 20 who died of extremely severe rheumatic infection in the seventh month of her pregnancy. In the foetus were found microscopical appearances of a definite, though non-specific, valvulitis. The mother's illness had been of four weeks' duration, starting with little more than fleeting joint pains as a sequel to a chill. Professor VEIL (Jena) referred to the existence of pre-rheumatic states, obscure illness with indefinite symptoms, and Professor LOEWENSTEIN (Vienna) mentioned the value of evidence from histological examination of glands in the neighbourhood of the joints affected.

Clinical Aspects

In the discussion on clinical aspects, with Dr. LEONARD FINDLAY and Dr. H. GRENET as rapporteurs, Dr. GERMAIN BLECHEMANN (France) commented on the frequency with which an attack of scarlet fever had been followed within a few days or weeks by articular rheumatism, often with cardiac complications. Professor C. BRUCE PERRY (Bristol) mentioned the frequency of antecedent tonsillitis. Recently, adopting a more searching examination into histories, he had found an antecedent sore throat in 45 per cent. of first attacks of arthritis or carditis and in 63 per cent. of relapses. In chorea such a history was not usually forthcoming. As for sex incidence, rheumatic diseases as a whole appeared to be more common in females than in males, in the West of England at all events. One sex differentiation was the greater frequency of involvement of the aortic valve in boys. This was found in 15 per cent. of male cases of carditis and only in 7 per cent. of females. In opening the discussion Dr. Findlay had thrown some doubt on the existence of a rheumatic lung

lesion, but this speaker believed that there was a genuine, though rare, involvement of the lungs in some cases, and not always as a terminal event, nor to be explained on the basis of congestive cardiac failure.

The discussion was concluded by Dr. S. SIWE (Sweden), who said that quick subsidence and extreme variability in the same individual were features of rheumatic infection in childhood. The sedimentation rate was at present the most convenient means of following the course of such infections, but chorea did not speed the sedimentation rate. Medical opinion in his country still adhered to the value of salicylates, which had more than a symptomatic action. He emphasized the necessity for long and careful supervision, with rest in bed, which in children implied hospital and convalescent accommodation.

Therapeutic Aspects

The discussion on treatment was opened by Dr. WILFRID SHELDON (London). He opened with a definition of juvenile rheumatism—the proceedings of the Congress had rather pointedly suggested the need for a definition—as embracing three clinical conditions: acute rheumatic arthritis (in this country called rheumatic fever), rheumatic disease of the heart, and rheumatic chorea. A fourth group of symptoms was subacute rheumatism, indicating a pre-rheumatic state, with vague limb pains, often combined with evidence of debility. In the general principles of treatment of acute articular or cardiac rheumatism rest in bed remained the sheet anchor. Since the introduction of salicylates sixty years ago no drug had reached the same popularity. Combined with alkali it should be pushed in acute articular rheumatism, and might be used in smaller doses for the relief of pain in carditis. The effect of aspirin was no greater than that of sodium salicylate, and it had the disadvantage of being incompatible with alkalis. Pyramidon had not gained popularity in this country except in the treatment of chorea. His own experience of sulphanilamide in this connexion was disappointing and the results of vaccine and serum therapy up to date had been inconclusive.

Professor DE HORVATH said that in Hungary juvenile rheumatism was far from being as rife as it was in Northern and Western Europe, but rheumatic disorders were tending to increase and the type of rheumatism was becoming more severe. One unusual complication increasingly noted was hepatitis. Treatment with gold preparations had resulted in no great improvement, and required, especially with children, most circumspect handling.

Dr. CAREY SMALLWOOD described the arrangements and routine at the Baskerville rheumatic colony, Birmingham. Did the advantages of colonization outweigh the disadvantages? Children from poor overcrowded homes who had reached the stage of convalescence from a recent acute carditis would reap great physical and educational benefit from long-continued care in a colony, but for the child with a scarred heart, whose rheumatic infection had died down, colonization might be extremely dangerous. Dr. L. SCHMIDT described a clinic for juvenile rheumatism which had been established at Pistany with the help of the Ministry of Health of Czechoslovakia. He suggested that rheumatism might appear in certain children under slight and confusing symptoms owing to a difference in the reactive power of the child. Very slight symptoms, including rises of temperature of even a quarter of a degree, should not be disregarded in a child suspected of a rheumatic tendency. He warned against the indiscriminating use of massage and baths.

Postural Exercises

Dr. WARREN CROWE (London) said that, having seen the work of Goldthwait and Loring Swaim at Boston, he had adopted some of their exercises for a number of patients at the Charterhouse Rheumatism Clinic and elsewhere with good results. In their books a long and complicated system of postural exercises was described, but these could actually be reduced, for most people, to two basal exercises of extreme simplicity, with a third for the narrow-chested, shallow-breahing asthenic type. They were performed lying on the back on a plane surface. Dr. Crowe projected a film beginning with some diagrammatic silhouettes showing faulty, improving, and good posture, and passing on to the exercises. The exercises were of a simple type designed to increase the activity of the circulation, to eliminate the lumbar curve and strengthen the abdominal muscles, and finally to expand the thorax and enlarge a narrow costal angle. If these exercises were carried out regularly for two or three minutes night and morning a correct posture was easily acquired. The common attitude, in which the lumbar and dorsal curves were exaggerated, the knees were slack, and the abdomen was sagging, would be gradually replaced by an upright and alert bearing—in Goldthwait's words: "Stand tall, weight on the balls of the feet, abdominal muscles contracted, lumbar curve flattened, chest and head up, and chin in." In rheumatic children the exercises should begin at the earliest possible moment compatible with the cardiac condition.

Dr. W. R. F. COLLIS (Dublin) discussed "growing pains"—a term in use before the days of scientific medicine. Subacute limb pains occurred in children usually between the ages of 3 and 14, and might be divided into three groups: (1) those appearing in attacks of subacute polyarthritis; (2) those appearing in attacks of rheumatism of the adult type, but not at all uncommon in children; and (3)—the largest group—pains due to debility, including those arising from deficiency diseases. Acute rheumatism really accounted for only one small group of cases of growing pains. Dr. E. P. POULTON was doubtful whether growing pains of any kind could be separated from the rheumatic state. Dr. CAREY SMALLWOOD said that in his view 95 per cent. of children who had growing pains showed no evidence of heart rheumatism. Often the pains were a psycho-neurological reaction to a bad environment.

Dr. GUNNAR EDSTRÖM (Sweden) mentioned the use of gold therapy. At the rheumatic clinic of the University of Lund sixty-nine cases of rheumatoid arthritis had been treated with gold salts (solganol) during 1937. Of the fifty-nine which received the full treatment (at least 2 grammes of solganol, never in larger doses than 0.25 gramme) good results were obtained in thirty-three and improvement in eighteen. In forty-one cases there were certain complications, including, in five cases, thrombocytopenia or granulocytopenia, but, these notwithstanding, he regarded the treatment as preferable to that with sulphanilamide or with vitamin B.

Dr. J. FORESTIER demonstrated the orthopaedic treatment given in severe cases of rheumatoid arthritis in children at Aix-les-Bains. By the use of successive plaster casts it had been possible to effect great improvement. A complete cast was kept in position for only eight or ten days, then half the plaster was cut away, retaining the posterior part as a splint. In this way ankylosis was prevented.

Social Aspects of Juvenile Rheumatism

In opening this discussion Dr. F. J. POYNTON remarked that the incidence of the disease in Great Britain was not known for it was not notifiable, and in view of what had taken place at the present Congress, when it was evident that the experts did not know what it was, he would not advise that it be made notifiable. As for causes, he believed the British climate to be largely responsible, with its swift unexpected variations, and the cold damp, which favoured tonsillitis and catarrh. The disease was more frequent among the poor, but the "poverty complex" did not explain all the facts of causation. Of gross faults of what he called the "microclimate" he mentioned overcrowding, which was held by the late Carey Coombs to be more important than damp in juvenile rheumatism.

As for nutrition, he had not thought that the rheumatic children under his care were in general ill nourished, but Sir John Orr's statement that a completely adequate diet was only reached at an income level above that of 50 per cent. of the population caused one to revise one's notions. The present "push" for swimming or bathing pools ought to be watched from the point of view of the rheumatic child, who was sensitive to sudden changes of temperature and to prolonged stay in cold water.

After Dr. MARIEL ORY and Dr. A. NORGAARD had described the social provision in Belgium and Denmark respectively, Dr. C. E. THORNTON of the Public Health Department, London County Council, described the rheumatism scheme of that authority. The treatment, care, and education of rheumatic children cost London £220,000 a year. In June of last year there were under supervision by the school doctors 2,500 children, with another 5,000 at the special supervisory centres, and 890 actually under treatment in the rheumatism hospitals. The "rheumatic area" of London followed closely the southern bank of the Thames, with some of the poorer areas on the northern bank; the north-west was relatively exempt. The seasonal curve reached its lowest in July, and was almost the inverse of the sunshine curve for London. The hospital provision made by the Council consisted of 900 beds, being 650 for acute cases and 250 for doubtful and convalescent. There were twenty rheumatism centres, ten entirely under the control of the Council and ten run in co-operation with voluntary hospitals.

In the course of the session a message was read from Professor Kontchalovsky of the U.S.S.R., and the Committee for the Study and Control of Rheumatic Diseases in Soviet Russia sent a report, specially prepared for the Oxford Congress, on the combating of rheumatism among Soviet children. The first clinic for juvenile rheumatism was opened in Moscow in 1934, and there are now clinics in many other cities, while in Moscow a special clinic for the rheumatism of adolescence is projected.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY

Annual General Meeting

At the annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society, held at its offices, 300, High Holborn, W.C.1, on March 29, Dr. F. C. Martley, chairman of directors, said that the year as a whole had been satisfactory, and although there was nothing spectacular in the new business figures, a steady volume had been maintained. The total life assurances showed a small increase and the sickness assurances a very small decrease, but during the present year, after the report and balance-sheet now presented were closed, a really substantial increase in both these classes of assurance had been experienced, as compared with the corresponding period in 1937. In the life assurance fund during the year under review the new sums assured had amounted to £500,000, the claims paid had been £14,018, and the premium income had increased to £123,207. The new business in the sickness fund was slightly less than in the previous year, but the previous year had been exceptionally good. The benefit paid away during 1937 was greater, being explained, apart from the increase to be naturally expected, by the influenza epidemic during the early part of that year.

Dr. Martley called attention to the item "Loans on medical practices," which, as shown in the balance-sheet, had increased to £225,922—a net increase of just under £40,000 over the previous year. More business than ever was being done in this field; often more applications were received than was altogether convenient, especially from the point of view of the time of the staff which was taken up in investigating them. Dr. Martley concluded with a reference to the investment policy of the Society. The funds were growing rapidly and stood at over one and a half millions. At the present rate of growth they would, if affairs pursued their natural course, be well over two millions by the next valuation. These were anxious times for those connected with the administration of insurance, and the directors felt that it was in the best interests of the Society to follow a cautious policy in maintaining a balance between the holdings in good industrial securities and in Government stock.

The report and accounts were received and adopted, and on the motion of Dr. G. de Bec Turtle, seconded by Dr. Fairfield Thomas, the two directors who retired by rotation—namely, the chairman, Dr. F. C. Martley, and Sir William Willcox—were re-elected. The chairman then proposed that the meeting recommend the payment of an interim bonus on all with-profit policies for permanent sickness and accident insurance and life assurances becoming claims during the year ending December 31, 1938. This having been agreed to, Sir William Willcox proposed a vote of thanks to the staff of the Society, mentioning the manager and secretary, Mr. Bertram Sutton, who, he said, had been with the Society almost since its inception, and Mr. Heath and Mr. Venus. This was carried with acclamation.

Reports of Societies

LUNG ABSCESS: DIAGNOSIS AND TREATMENT

At the meeting of the Medical Society of London on March 28, with the President, Mr. J. E. H. ROBERTS, in the chair, a discussion took place on the diagnosis and treatment of lung abscess.

Dr. JAMES MAXWELL defined lung abscess as non-tuberculous suppuration with cavitation occurring in lung tissue. The causation of lung abscess could be approached in two ways: by animal and by clinical experiment. Most of the animal experiments, however, seemed to be entirely misconceived. The animals used were naturally quadrupeds, their trachea was naturally horizontal, and there was absolutely no guarantee that a result which applied to an albino rat applied to a human being. The cough reflex in humans was a most important way of keeping the respiratory passages clear, but in the animal a cough was quite an unusual event—so unusual that in the case of a Derby favourite it was a matter for the "Stop Press"! Clinical study gave the answer to the causation of abscess. He referred in particular to the condition now becoming well recognized as pneumonitis, an inflammatory consolidation of the lung of any sort. With such inflammatory consolidation, the fate of the patient would depend not only on the local resistance in the lung tissue but also on the general resistance. Dr. Maxwell outlined the position by the following table:

Resistance to Infection

General	Local	Results
Good	Good	Pneumonitis
Good	Bad	Lung abscess
Bad	Good	Pneumonia
Bad	Bad	Septicaemia

He was coming to look on pneumonitis as the precursor of most of the acute inflammatory lung troubles. It did not really matter how the organism got to the lung, whether by aspiration or the blood stream, the results would be the same according to the resistance of the patient. Any condition which caused infection of the lung would cause abscess if the resistance in the lung tissue was not sufficient to overcome the infection. He listed the causes of lung abscess as follows:

(1) Lesions involving the respiratory tract.
(2) Abdominal conditions.
(3) Sequel to peripheral septic conditions.
(4) Lesions of the nervous group.
(5) So-called primary lung abscess.

The diagnosis depended on the symptomatology, the signs, and the results of special investigation. Cough was a fairly common early symptom; for the first week or longer it might result from irritation of the bronchi and therefore be unproductive, but even at that stage there was surrounding congestion and therefore haemoptysis was to be expected. Then there might come a stage when there was sputum, appearing quite suddenly and in considerable quantity. Another symptom which might arise was pain in the chest; this helped to localize the lesion. Shortness of breath was not a very prominent symptom. Temperature varied very little; in some cases there might be a high temperature with rigor, but in many others it was possible to have quite a large abscess with little or no pyrexia. One symptom which was almost diagnostic, especially in an acute case, was that cough was induced by change of position. Among special investigations great help was obtained from bronchoscopy, which would not only make the diagnosis but assist materially in treatment. Radiology of the chest was also most important. Very often the shadow of the abscess was approximately circular and fairly well defined. The presence of a clear zone was perhaps the most important feature in the radiological picture of lung abscess. In the *x*-ray picture the lateral view was quite as important as the antero-posterior. The tomographic representation was also often of value. One investigation which was dangerous was the needling of the chest. This should never be done without the most serious consideration.

The evidence went to show that deficiency in the cough reflex was one of the factors which tended to promote infection. So far as post-operative lung abscess was concerned, very often pre-operative and post-operative medication was at fault. The giving of morphine, in his view, tended to diminish the cough reflex to an extent which allowed suppuration to occur. A certain number of patients with lung abscess, if left alone, would get rid of their abscess spontaneously, sometimes by absorbing the pus and sometimes by coughing it up. His plea as a physician was that cases should be watched as long as this was reasonably safe, and not operated on until there were definite indications for so doing. An abscess which would not diminish in size as a result of postural treatment seemed to be one in which surgery ought to be considered. While the initial bronchoscopy was extremely valuable, repeated bronchoscopy was a waste of time, because it was likely to be most effective in the same cases as were benefited by postural drainage alone. As to artificial pneumothorax, if the abscess was deeply situated, draining into a bronchus, and failing to resolve, then an artificial pneumothorax might help it to heal.

Surgical Considerations

Mr. R. C. BROCK said that from the textbooks one was liable to gather the impression that lung abscess quite commonly followed an operation, the inhalation of a foreign substance, or an attack of pneumonia. But in fact almost all critical observers agreed that the so-called primary lung abscess formed by far the greatest proportion of cases. No obvious predisposing cause was to be found. He was unconvinced as to any common association between true pneumonia and lung abscess. The term "pneumonitis" was a convenient and satisfactory one to explain the preliminary pathology. In the large group of abscesses of uncertain origin he had been impressed with the frequency with which gross oral or nasal sepsis was discovered, and he was quite sure that that was an important causal factor. In the radiological examination he emphasized the importance of the lateral view. In his own experience the commonest site of lung abscess was the apical branch of the lower dorsal lobe. The site second in frequency was the axillary portion of the upper lobe. Abscess of the middle lobe was rarely seen as a primary abscess, though it was not at all uncommon as a secondary one.

The treatment of lung abscess differed in no way fundamentally from the treatment of abscesses anywhere else in the body. The principle was to aid maturation and spontaneous discharge of the abscess by some simple means, but when it was realized that this was not going to take place by such means resort must be had to some form of surgical attack. Postural drainage to many people implied merely tipping the end of the bed, but it was only with an abscess in certain portions of the lower lobe that this device was of any value. Mr. Brock indicated the postures which were of use for abscesses in different positions. A great deal of nonsense had been written about bronchoscopic aspiration. It was a valuable form of treatment, but too many people had the idea that it was a magician's wand. External drainage became indicated when it was clear from a study of the clinical and radiological condition of the patient that improvement was stationary or not to be expected.

General Discussion

Dr. F. G. CHANDLER drew attention to a condition which might be called suppurative pneumonitis, but in which there was no definite abscess, no cavity or definite collection of pus. He asked for suggestions as to how such a condition should be treated. Mr. TUDOR EDWARDS said that he had never seen a true pneumococcal abscess of the lung, and he believed the majority of abscesses so described were inhalation ones. The guard of the larynx was not complete, and the cough reflex not entirely satisfactory. At any rate, cases of single, as apart from multiple, abscesses were largely caused by that type of infection. Dr. P. H. MANSON-BAHR drew attention to amoebic abscesses of the lung, either primary or secondary to liver abscesses. Such cases might arise many years after people had left the tropics.

The PRESIDENT said that it had been the custom for many years for lung abscesses to be treated in a most optimistic spirit. Because a certain proportion of cases recovered spontaneously all cases had been kept waiting in the hope that they would make spontaneous recoveries, but during all this time the infection was continuing in the lung and producing irreparable damage. Operative drainage of lung abscess at an early stage was not a very dangerous procedure. He was not advocating indiscriminate operation on all cases, because he agreed that a considerable number did recover spontaneously. The primary treatment of a lung abscess was non-operative—postural, with drainage—but if there was evidence that the abscess was not draining it was necessary to go further. One good piece of evidence that an abscess was not draining was the fluid level in the cavity. If the fluid level persisted for fourteen days it was clear that the cavity was not draining efficiently. Apart from evidence as to the fluid level, if the patient was clinically improving and the radiographical shadow was getting less, then by all means non-operative treatment should continue, but if after a trial of fourteen days there was no clinical improvement or some clinical but no radiological improvement, of if after some progress there was a relapse, then it was of no use proceeding with conservative treatment.

Dr. BURTON WOOD said that the problem which distressed the physician was not so much the fixation of the abscess as the forms of pulmonary suppuration in which the abscess was much less clearly defined. The introduction of prontosil opened up a new field, and he hoped that some method would be found of dealing with the extensive pulmonary suppurations which constituted a more difficult problem than the abscesses with which the surgeon usually successfully dealt. Dr. J. G. SCADDING joined with Dr. Chandler in saying how difficult were the cases in which there was no definite abscess cavity. He mentioned one case which he said was a true wandering pneumonitis. These were the really difficult cases, and as for indications for treatment—well, there were none. Dr. E. R. BOLAND related an interesting case in which a patient had lost his pulmonary abscess by cough-

ing as a result of having his stretcher carried up in various tilted positions to the fifth floor of a nursing home!

Dr. MAXWELL, in reply, said that although he had put primary abscess at the end of his table of causes, it did not imply that it was the least frequent; nevertheless he was surprised at the figure of 70 per cent. which one speaker had mentioned. The suggestion he would make to Dr. Chandler for dealing with the diffuse type of case he had illustrated was that ultra-short-wave diathermy should be used. The cases that did not resolve completely with this procedure were likely to break down and form a definite abscess.

Mr. BROCK agreed that the treatment of suppurative pneumonitis was a most difficult aspect of the problem. The diathermy loop was the most likely method to succeed. As to needling, the needling of a lung abscess was very dangerous, but in the type of case mentioned in which there was a "diffuse black-out" and in which there seemed to be a chance of saving life if the cavity could be found, he thought needling was excusable. The cases he had needled had always had a very resistant pleura, and no question of infection of the pleura had arisen. He had on occasion found a cavity as big as a hen's egg, and after draining it the patient had recovered. Operation performed unsuccessfully without any accurate localization might be the most calamitous treatment, but if care were taken to localize accurately the external drainage operation might be very simple in procedure and very dramatic in its results.

THE ITALIAN ARMY IN ABYSSINIA

Hygiene and Hospital Organization

At a meeting of the Royal Society of Arts on March 30, with Sir HUMPHRY ROLLESTON, BT., presiding, Dr. ALDO CASTELLANI, K.C.M.G. (Hon.) (Count of Kisymaio), who was appointed by Signor Mussolini High Consultant and Inspector-General of all the medical units in East Africa and the Red Sea, described in a lecture the hygienic measures and hospital organization of the Italian expeditionary forces during the recent Abyssinian campaign.

The war began on October 3, 1935, and ended on May 9, 1936, a few days after the fall of Addis Ababa. During this period the Italian troops on the northern front (Eritrea) and the southern front (Somaliland) numbered about 500,000. It is believed that this was the first time in history that so large a mass of white troops was transported to a tropical zone, and in view of heavy losses from sickness in previous campaigns in tropical countries the situation was viewed with some misgiving. In 1890 the French lost in Tonkin more than one-eighth of their troops owing to disease. In the French expedition to Madagascar in 1895 disease accounted for the death of more than one-third of the army. In seven months of the Boer War (March to September, 1900), out of a total of between 150,000 and 200,000 men, disease accounted for over 5,000 deaths. During the Great War the East African Expeditionary Force, with an average strength of 50,000, lost 6,300 men by disease, as compared with 2,374 killed in battle.

It was fortunate, said the lecturer, that the head of the Italian Government realized immediately the enormous importance of medical preparation in a colonial war. The requests made to him for medical personnel and hospitals were immediately acceded to, and, in fact, even doubled at his express command. Vast supplies of drugs, disinfectants, serums, and vaccines were dispatched to Africa, as well as hospital and laboratory equipment of every kind. During the war period the Italian army had 135 base and field hospitals, each with medical and surgical wards, a bacteriological laboratory, and an *x*-ray department, also fifty-five small transportable hospitals, thirteen special surgical units, fifteen *x*-ray ambulances, four central institutes for special chemical and bacteriological investigation, and twelve disinfecting stations. The navy had twenty hospitals and infirmaries along the coast, together with eight hospital ships, and the air force had twenty-two infirmaries. The medical personnel in Africa numbered 2,484, of whom 2,205 were officers in the Royal Army Medical Corps and Militia. All the army medical officers were required to take a course of instruction at the Hospital for Tropical Diseases in Rome before leaving for Africa. There were 384 nurses serving on board the hospital ships and in the base hospitals, and 200 hospital nuns also tended the sick, while the regular hospital attendants and male nurses numbered 15,500.

Sickness Prevalence

Malaria gave no serious concern to the Italian army, though a number of the zones in which it operated were badly malarial. The number of cases of primary malaria admitted to hospital was 1,241, and of relapses, 1,093. There were twenty-three deaths from pernicious forms, including blackwater fever. Quinine prophylaxis was insisted upon from the beginning, every soldier receiving three tablets a day of quinine sulphate or bihydrochloride, each tablet containing 0.2 gramme. At every meal the commander-in-chief and his staff officers set an example by taking quinine regularly. The men were frequently paraded and a test of urine made to find out whether quinine had been taken.

The number of hospital cases of dysentery was 453, without a death. The great majority of the cases were of amoebic origin. First among the prophylactic measures was pure drinking water. Practically all the officers drank mineral waters which had been bottled in Italy. For the troops the local water was always purified by boiling or some method of chlorination. The men were recommended to get into the habit of washing or disinfecting their hands with a 2 per cent. solution of lysol or lysoform after visiting the latrine or before having meals, and lysol disinfection was strictly enforced on cooks and others serving in the kitchens. No vaccines were used, the reason being that vaccines containing the Shiga-Kruse bacillus gave a severe reaction. With regard to oral vaccines, the lecturer had not been able to convince himself that they were really efficacious. One "grandmotherly" precaution was adopted in the provision for each soldier of a flannel abdominal belt to prevent chills.

Not a single case of cholera occurred before, during, or after the war. The cases of typhoid and paratyphoid infection numbered 458 with 161 deaths. One of the precautions taken was vaccination with mixed vaccine. No cases of typhus were reported, thanks to the imposition of rigorous cleanliness. On the other hand, the Abyssinian troops were known to have thousands of cases of typhus, and louse infestation was common among them. There were only seventeen cases of relapsing fever, with no deaths, among the Italian troops, but the Abyssinians were said to have had between 20,000 and 30,000 such cases. Small-pox also occurred among the Abyssinians in great numbers, but there was only one case (which recovered) among the Italians. Heat stroke was almost completely absent—a total of thirty cases, with seven deaths—the virtual immunity being due to the use of the sun helmet, the prohibition of alcoholic drinks except after sunset, and the avoidance of marching wherever possible.

Many cases of beri-beri occurred among the Abyssinian troops, but not a single case among the Italians during the war, though one case developed after the war was over. Scurvy was rampant in the Abyssinian army on the Somaliland front, but again no cases occurred among the Italians, the ascribed reason for this immunity being that every soldier was given a lemon a day. The soldier's ration included a daily allowance of bread, beans and

potatoes, fruit, beef, cheese, sugar, salt, olive oil, and coffee, with macaroni or spaghetti six times a week, rice once a week, condensed milk twice, marmalade twice, wine daily when obtainable, and brandy once a week. As major diseases were so low in incidence, more attention was paid to minor diseases, as, for example, such conditions as "prickly heat" (lichen tropicus), for which menthol-alcoholic lotion was used, and dhobie itch, for which the parts affected were powdered with boracic acid.

Total Casualties

The total casualty list, for an army of 500,000 men, comprised 1,099 deaths on the field or from wounds and 599 deaths from "disease," the term "disease" including any injury or accident not caused by the enemy.

In conclusion the lecturer quoted statements made by Mr. J. L. Rohrbaugh, correspondent of the United Press of America, who, after describing the ravages of disease in the Abyssinian army, where, he said, scurvy destroyed the army on the southern front and small-pox the army on the northern, while typhus passed from camp to camp, added, "It is obviously no exaggeration to say that one of the prime reasons for the Italian success was the continued health of their armies, due to the efficiency of their medical service. It also might be observed that medical science made it possible for white people to live in unhealthy climates under adverse conditions and to remain in better health than natives acclimatized by hundreds of years of continuous abode."

Local News

ENGLAND AND WALES

The Gloucestershire Scheme

A long and honourable period of service has been brought to a conclusion by the retirement of Dr. J. Middleton Martin from the position of Medical Officer of Health for the administrative county of Gloucester. Dr. Martin assumed office in 1903, at first mainly in an advisory capacity, but very soon executive duties began to be added to him, beginning with the Midwives Act and the medical inspection of school children, and continuing through the years as his Council assumed new responsibilities in the field of public health which it was his function as their administrative head to translate into appropriate action. National health insurance, mental deficiency, dental treatment, venereal disease, maternity and child welfare, the care of the blind, and other activities all engaged his attention in turn, but his creative touch has been nowhere more apparent or more happy in its results than in his scheme for the extension and co-ordination of the medical practice of his county, with its chain of services covering the whole county area, based on the three large general hospitals at Bristol, Cheltenham, and Gloucester, and out-stations of hospitals over the county at which treatment is given weekly by the local practitioners and at which members of the hospital staffs attend periodically to give special services to patients grouped for examination. The scheme in its inception was recognized as a model by one of the Consultative Councils of the Ministry of Health. As it developed it established touch with the University of Bristol, and brought within its ambit the treatment of goitre, the rheumatic heart, maternity and child welfare work, and other activities. Orthopaedics is now well organized. In 1936 there were under review by surgeons 1,040 cases of deformity, including fifty-nine poliomyelites—the aftermath of an outbreak of that infection during the previous year. Much has been said and written by many on the co-ordination of medical service and much drawn in diagrams exhibiting circles, squares, and triangles joined by lines which somehow in the end lead precisely back to the point from which they started. But Dr. Martin acted. While others studied the gale warnings he launched away and may justly be claimed as the pioneer in this country of a vitally important branch of organized medicine. His professional friends trust that he may long be spared to witness the widening expansion in other English county areas of the system for which he set so excellent a model.

Liverpool Tropical School

The thirty-eighth annual report of the incorporated Liverpool School of Tropical Medicine (1936–7) constitutes a further record of a wide range of useful work. During the year 145 patients were admitted to the tropical ward of the Royal Infirmary, and many others were treated in the out-patient department. One hundred students from many parts of the world attended the various courses. Those in the D.T.H. classes received additional practical instruction in village hygiene, surveying, and sanitary engineering at the demonstration area at Melling, where an all-concrete house has been erected, a bore-hole type of latrine installed, and a simple type of incinerator, suitable for village work, constructed. The recently inaugurated short courses of instruction in elementary tropical hygiene for non-medical people were attended by nineteen men and women. At the Sir Alfred Lewis Jones Laboratory, Freetown, Sierra Leone, recent work suggests that typhus is likely to prove a disease of considerable importance in British West Africa. Although much progress has been made, this work is still in its preliminary stages, and some time must elapse before even such fundamental points as the type of the disease and the nature of the vector are established with certainty. A research with great practical potentialities is being carried out by Dr. A. J. Walker. This is a study of a disease affecting mosquitos which proves fatal to both larvae and adults. It is obvious that this investigation may produce results of considerable importance in the control of mosquito-borne diseases. The laboratory is also responsible for the first ecological rat survey in West Africa, which was carried out during the period under review. The wise provision of long study leave for the West African Medical Staff enables its members to keep abreast of developments in other countries. For example, Dr. T. H. Davey left the colony on study leave after an attack of typhus contracted as a result of his research work. He continued to work on typhus at the Pasteur Institute in Tunis, represented the School at the Medical Congress at Algiers, and prosecuted further studies in Hamburg. The report includes a list of twenty-seven original publications by members of the staff.

Industrial Foot Injuries: Standards for Footwear

The British Standards Institution has been asked to set up a standard specification for safety footwear. This request was made unanimously at a meeting of manufacturers and users called recently on the initiative of the National "Safety First" Association, in conjunction with the Boot Trades Research Association and the Industrial Welfare Society. The importance of preventing foot injuries is emphasized by an inquiry recently carried out by the Sheffield Industrial Committee of the National "Safety First" Association, which revealed that over a group of fifty-six firms the average proportion of foot injuries in non-fatal accidents was as high as 14 per cent., and it is known that proportions of 25 per cent. and 30 per cent. are not uncommon in individual cases. Over 11 per cent. of non-fatal accidents in coal mines are foot injuries. Giving protection for the feet is the most simple and adequate way of avoiding these accidents, which have many different causes. Many employers have realized this fact and for some years manufacturers have been supplying special "safety boots." These boots are of various types, but the essential feature of all of them is a hardened toecap, which will not collapse even if

a heavy weight is dropped on it. At present there is no standard of performance by which the various boots can be used, so that the new development should be welcomed by makers and users alike. In order not to stifle development the standard will not specify materials and construction, but will only state, for instance, that the toecaps must withstand a certain weight dropped from a certain height and must satisfy agreed endurance tests. The maximum weight a man can carry—about 1 cwt.—dropped from his hands on to his toes may be taken as a basis of discussion.

Notification of Measles and Whooping-cough in London

As stated in the *Journal* of March 5 (p. 534), the London County Council is proposing to require compulsory notification of measles and also whooping-cough in London. At present compulsory notification of measles under orders made by the Minister of Health is in operation in eleven metropolitan boroughs only. In all but one of these boroughs notification is partial, being confined to the first case in the same household or institution within a period of two months. In three boroughs it is further limited to children under the age of 5 years. If the figures supplied by eight metropolitan borough councils where notification has been in operation for some years are representative of London as a whole, it may be assumed that, had notification on the same basis—namely, the first case in the same household or institution within a period of two months—been in force throughout the county, approximately 94,000 cases of measles would have been notified during the epidemic of 1935–6. The total number of cases, therefore, must have been far in excess of the 54,200 of which borough medical officers of health were informed during that epidemic. Whooping-cough is compulsorily notifiable in five metropolitan boroughs, but the notification is limited in two of them. The average number of deaths annually in London during the ten years 1927–36 was 527 from measles and 394 from whooping-cough.

The Hospitals and Medical Services Committee, in its report to the Council on the subject, points out that measles and whooping-cough are serious not only in themselves but in the complications and sequelae that frequently arise. Compulsory notification has an undoubted psychological effect on the attitude of the general public towards infectious disease, notifiable diseases being regarded more seriously than non-notifiable ones, and a greater readiness to obtain medical advice and treatment is shown. It is the opinion of the committee that the Minister should be asked to make regulations to render measles and whooping-cough compulsorily notifiable on a uniform basis throughout London. It is not proposed that the regulations should apply to German measles, and it is considered sufficient if the notification is limited to the first case occurring in the same house or institution within a period of two months, as this will enable the necessary contact to be established with the borough medical officers of health. It is believed that the compulsory notification may result in a decrease in the number of complicated cases requiring admission to the Council's hospitals. The annual cost of the repayment of notification fees is not expected to exceed £8,000 a year.

Hospital Services and Boundaries

The special body called the Provisional Central Council, set up to consider and advise how the recommendations of the Sankey Commission can be made effective, has held two meetings. It has issued a letter to the secretaries of the existing regions of the British Hospitals Association, copies of which have been sent to the chairman and secretary of every voluntary hospital in England and Wales. In this letter it is asked that special meetings should be called for the purpose of considering the present boundaries of the region, the adequacy of the service given in it, and generally to give information regarding local views and wishes. The Provisional Central Council's letter outlined what services in its view should be found in a hospital region, which, normally speaking, should be based upon one central or "key" hospital. Members of the Provisional Central Council are willing to attend meetings in the various regions of the British Hospitals Association and discuss with representatives of the voluntary hospitals their difficulties and problems. The address is 12, Grosvenor Crescent, S.W.1.

Bacteriological Investigation of Puerperal Sepsis

Sir Arthur MacNalty, Chief Medical Officer of the Ministry of Health, has issued a leaflet to medical officers of health on bacteriological investigation with reference to puerperal sepsis. He recalls that the Departmental Committee on Maternal Mortality was early impressed with the number of fatal cases of puerperal sepsis in which no source of infection had been traced. Hence the desirability of combining epidemiological and bacteriological investigation more often, particularly with a view to defining the responsibility of throat carriers and to elucidating the part played by other possible infective agents in persons in contact with the patient. By arrangement with the Medical Research Council investigations were made at a central laboratory over a period of two years, and these confirm the importance of carriers of infection in the various forms of puerperal fever due to the *Streptococcus pyogenes*. Since administrative difficulties often arise from bacteriological uncertainty regarding the nature and source of puerperal infections, medical officers of health are asked to take every opportunity to obtain help on these points from bacteriologists attached to adequately equipped local laboratories.

On the occurrence of pyrexia in a lying-in woman, appropriate measures for the isolation of the patient should be arranged immediately. Steps should at once be taken to ascertain the cause of the pyrexia, and where this is found to be due or suspected to be due to uterine infection, swabs should be taken from the cervix, throat, and nose. Simultaneously search should be made for any possible source of the infection—for example, sore throat, tonsillitis, laryngitis, antral or skin infection—in the persons who conducted the labour or were otherwise in contact with the patient during the subsequent forty-eight hours. Swabs from throat and nose and from any obviously infected site should be taken from all contacts, whether or not associated with clinical manifestations of disease. It should be remembered that as contact with hands and instruments is the most likely mode of infection of the genital tract, particular attention should be directed to infections or abrasions of the skin in anyone who has had such contact with the patient. Ordinary diphtheria swabs may be used for taking specimens except from the cervix, where a longer swab, mounted on malleable aluminium wire, is preferable. In swabbing the cervix a speculum should be used. The examination of the swabs may lead to the detection of the same bacteriological strain in a patient and in someone who has been in contact with her, or to the establishment of the identity of the strain from the cervix with that from the throat or nose of the patient herself. As a result, appropriate treatment can be applied and necessary administrative action taken to prevent further spread of the infection.

"Family Meals and Catering"

The Children's Minimum Council gave a lunch on March 30 at the London School of Economics. The menu was based on recipes from the British Medical Association's cookery booklet, *Family Meals and Catering*, and the cost per head for the 250 guests was estimated at 6d. The meal consisted of tripe and onions with potatoes; or mince with rice and swedes; or fried cod with parsley sauce and mashed potatoes; stewed figs and custard or plum duff; and bread and water. Tripe and onions followed by plum duff seemed to be the most popular combination. Lord Horder, who presided, said that he had just been informed by Sir Kaye Le Fleming that 130,000 copies of *Family Meals and Catering* had been sold before

it was ever advertised, and a new edition would shortly be available. In his opinion, the problem of feeding the individual would only be solved by tackling the larger problems of food production and food distribution. Mrs. Yates, wife of an unemployed labourer, said she could not even give her family the minimum laid down by the British Medical Association. Her total weekly income was thirty-eight shillings, of which more than sixteen shillings was paid in rent. Only ten shillings a week could be spent on food for herself, her husband, and her child. Miss Eleanor Rathbone, M.P., who is chairman of the Children's Minimum Council, also spoke, and concluded by saying that although the expenditure of the Children's Minimum Council was only £600 a year its funds were nearly exhausted. Unless additional financial support was forthcoming it could not carry on its work for more than a few months.

Maternity and Child Welfare

A National Conference on Maternity and Child Welfare, organized on behalf of the National Council for Maternity and Child Welfare by the National Association of Maternity and Child Welfare Centres, will be held in the Great Hall of the University of Bristol on July 5, 6, and 7. The general subject of the conference, the president of which will be the Parliamentary Secretary to the Minister of Health, Mr. R. H. Bernays, will be "The Child of the Future," and the discussions will be arranged as follows: psychology of pregnancy, in conjunction with the falling birth rate—its effect on the future; the need for closer co-operation between the school medical and maternity and child welfare services, and the need for increased provision of convalescent residential accommodation for children under school age; physical fitness in young children—(*a*) prevention of postural defects, (*b*) treatment of minor orthopaedic defects; the place of the voluntary worker in the schemes of local authorities; the parents of the future—(*a*) parentcraft teaching for senior scholars (boys and girls), (*b*) simple sex teaching in boys' and girls' clubs, (*c*) individual preparation for marriage; and twenty years of child welfare—retrospect and prospect. The conference is open to all who are interested in maternity and child welfare. The fees for full membership, including the receipt of printed matter, are £1 1s. per member; in the case of two members representing the same local authority or voluntary organization it will be 15s. each, or in the case of three or more such members 14s. each. Applications for tickets, with remittances, should be sent to Dr. Minett, honorary secretary, National Association of Maternity and Child Welfare Centres, 117, Piccadilly, W.1.

SCOTLAND

University of Aberdeen

Among other recipients of the LL.D. degree at the graduation ceremony of Aberdeen University on March 30 were two members of the medical profession, Dr. E. J. Butler, F.R.S., Secretary to the Agricultural Research Council, and Dr. Gunnar Dahlberg, Director of the Institute of Medical Genetics at Uppsala, Sweden. Professor T. M. Taylor, in presenting the recipients, said that Dr. Butler had worked for nineteen years in India as Imperial Mycologist and Agricultural Adviser to the Government, and on his retirement from that post had been appointed Director of the Imperial Mycological Institute, while his experience had recently received further recognition by his appointment as secretary to the Agricultural Research Council. Dr. Dahlberg was the leader of a new Scandinavian school of human genetics, who had made contributions to the mathematical analysis of human pedigrees with the object of distinguishing between the action of genes and the influences of environment. He was without doubt the leading human geneticist of the present day.

Scottish Committee on Nursing

The inquiry into the recruitment and terms and conditions of service of nurses in Scotland was carried a stage further when the Departmental Committee on Nursing at their fifth meeting heard witnesses from eight more bodies. These bodies were the Scottish National Health Visitors' Association, the South-Eastern Counties Joint Sanatorium Board, the Royal Samaritan Hospital for Women, the National Association of Local Government Officers, Edinburgh Royal Infirmary, Lanark County Council, Glasgow Western Infirmary, and the Royal College of Surgeons of Edinburgh.

National Institution for Mental Defectives

At the annual meeting of the Royal Scottish National Institution for the care and treatment of the mentally defective at Larbert, held in Edinburgh, Dr. T. R. C. Spence, medical superintendent of the institution, said that many wild ideas were held regarding the part played by heredity in the cause of mental defect, but in fact we did not yet know anything about the transmission of defect. A defective child could appear in the midst of a normal family, and an even more striking fact was that the parents of mentally defective children were comparatively rarely themselves mentally defective. In this institution in practice not more than 5 per cent. of the patients were found to have a parent who could be said to be mentally defective. The defective was a mental cripple and an innocent victim of misfortune. He was happier and more useful among those who were affected like himself, and he should be given a chance to develop his limited capacities to their utmost under sheltered conditions of life. It was stated at the meeting that the number of cases on the register of the institution was 732. The city of Edinburgh provided for mental defectives by four special schools capable of teaching 480 pupils, and had also an occupation centre with eighty pupils. The institution at Gogarburn had recently been enlarged by fifty beds.

Massage for Fitness

An extension of the Scottish Clinic and School for Massage and Electrotherapy was opened in Glasgow on March 25. This clinic was founded in 1928, and the number of treatments has increased from 8,562 in 1930 to 42,480 last year. The clinic provides physical therapy for people unable to pay and whom the infirmaries are unable to treat. There is also provision for the practical training of students from the Anderson College of Medicine. Patients are attended only on the recommendation of their own medical attendant, and over 250 doctors regularly send patients to the clinic. Much of the treatment is carried out in the evenings so that patients are able to continue their ordinary employment during the day.

Edinburgh Maternity Hospital

At the annual meeting of the Simpson Memorial Maternity Hospital it was stated that every effort would be made to have the new maternity hospital ready by October 1, although it was feared that the opening day might be nearer January 1 next year. During the summer the new building in the grounds of the Royal Infirmary would be open for inspection. The annual report shows that during 1937 the number of cases treated was 3,460, while attendances at the ante-natal and other clinics numbered 16,813. The maternal mortality during the year was 8.1 per 1,000 patients treated in the hospital, a decrease of 2.3 as compared with the figure for 1936; most of these cases were emergency or difficult cases. The report refers to the likely effect of the Maternity Services (Scotland) Act, 1937, which may diminish the number of outdoor cases available for the training of pupil midwives and medical students, and which will also involve increased expenditure in the appointment of a number of additional trained midwives at the hospital.

Correspondence

Modern Views on Pellagra

SIR,—We wish to comment upon several points raised in your interesting leading article[1] under this title, and to supply certain information not contained therein.

1. You refer to the results of Elvehjem et al[2] in treating canine black tongue successfully with nicotinic acid and await confirmation of their findings; this is now forthcoming. We had independently isolated nicotinic acid amide from aqueous extracts of liver before the appearance of Elvehjem's report, and have since confirmed the observation that nicotinic acid will cure black tongue.[3] Similar confirmation has been made by at least three other groups of workers in this country.[4]

2. In referring to animal tests of fractions from yeast, liver, etc., for pellagra preventive activity you suggest that the application of results obtained from tests upon rats and dogs to human pellagra is "difficult and uncertain." A distinction should be made here between tests with these two species. It was shown two years ago by one of us[5] that the rat deficiency disease then supposed to be analogous to human pellagra is in fact aetiologically different from the human disease, and we have recently demonstrated that so-called "rat pellagra" is not cured by nicotinic acid,[3] whereas four groups of workers have now found this substance to be active in curing human pellagra.[6] The canine disease, but not the rat disease, therefore resembles human pellagra in that treatment with nicotinic acid is curative. Moreover, throughout the long series of investigations conducted by officers of the U.S. Public Health Service[7] it has consistently been found that foods and preparations active in the prevention or cure of black tongue are also active in the prevention or cure of human pellagra, and materials inactive in the one disease are also inactive in the other. This parallelism between the materials which will cure each of the two diseases—extending right to the pure synthetic nicotinic acid—suggests strongly that black tongue and human pellagra are caused by deficiency of one and the same substance. From these considerations we conclude that the results of tests involving the so-called "rat pellagra" cannot be applied to human pellagra problems at all, while the results of canine-black-tongue tests can be applied with much confidence.

3. The question is raised in your article whether the consumption of trigonelline contained in the bread eaten in rural Lower Egypt has any influence on the incidence of pellagra. We have isolated trigonelline from liver extracts in addition to nicotinic acid amide, and have tested its activity in canine black tongue. Six dogs each of about 10 kg. weight were given a slightly modified Goldberger No. 123 diet[8] and watched until they developed black tongue, as judged by inflammation of the mucous membranes of the mouth and throat, loss of weight, excessive salivation, loss of appetite, listlessness, and diarrhoea. As each developed black tongue it was treated parenterally with trigonelline. One animal received a single dose of 120 mg. and the others received daily doses of 10, 20, or 40 mg. All the dogs showed increasingly severe symptoms and died within four days after treatment was begun. Controls were provided by other dogs which were allowed to develop black tongue and were then treated with doses of nicotinic acid of the same order as the trigonelline doses. These dogs soon regained their appetites, increased in weight, and their mouths returned to normal. It appears from this observation that trigonelline has no curative power in black tongue, and it can be confidently predicted that it will have no curative or preventive power in human pellagra. It has long been known that the dog excretes a part of the nicotinic acid fed to it as trigonelline[9]; whether the transformation is a detoxication mechanism for dealing with excessive amounts of nicotinic acid, or whether it occurs during the normal processes into which nicotinic acid enters, is not known.

4. You also raise the question of the complication of the current position introduced by Leutsky with his work on "pellagra-like" lesions in mice.[10] It is probable that this work can at present be dismissed from consideration in this connexion as no evidence that the mouse syndrome is identical with human pellagra has been adduced. When Goldberger first produced a symmetrical dermatitis in rats by means of a dietary deficiency twelve years ago,[11] it was reasonable to regard it as analogous to human pellagra, but it has since been abundantly proved that the analogy is superficial. In more recent years a dermatitis of chickens has been regarded as "chick pellagra."[12] This disease again is really not analogous to human pellagra as it is not cured or prevented by the same materials. Jukes has shown that the factors responsible for cure of the chick disease and human pellagra respectively are differently distributed in natural foodstuffs,[13] and we have shown that nicotinic acid will not cure the chick disease.[3] In view of these earlier experiences with "pellagra-like" diseases caution should be observed in calling any animal syndrome "pellagra-like" until it has been shown (*a*) that it can be induced by the deficient diets upon which human beings develop pellagra; (*b*) that a number of foodstuffs (or one chemically pure substance) known to prevent or cure human pellagra will also prevent or cure the animal disease; and (*c*) if one of the symptoms is a dermatitis it must be shown that the appearance of the dermatitis is dependent upon exposure to light following a period of feeding on the deficient diet. Leutsky has not established any of these criteria for the mouse condition which he describes. Applying these criteria, canine black tongue and the recently described disease in pigs[14] are the only true analogues of human pellagra which we know to-day.—We are, etc.,

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March 7.

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Causation of Cancer

SIR,—Dr. W. E. Gye's lecture, published in the *Journal* of March 12 (p. 551), is an admirable summary of the present position of experimental cancer research, but it is regrettable that in the words of the old music hall song "he cannot see the fields for the houses in between." Dr. Gye appears to object to the theory that tumour formation is due to the mutation of genes in somatic cells, not because he can bring forward any facts which disprove it, but because of the means by which this theory has been arrived at. The theory was admittedly formulated by a process of logical deduction, but apart from the argument that if we can arrive at the truth how we get there is a matter of but small importance, the method of logical deduction is often the best way of advancing our knowledge of obscure phenomena, more especially when they involve structures too small to be visible even with the aid of the most efficient miscroscopes.

In dealing with such problems there are two well-recognized means of investigation open to us: first, by experiment, and, secondly, by deduction from analogy and seeing whether deduced consequences actually occur. Dr. Gye is a brilliant exponent of the first method, but it is a pity that he should try to ridicule the second, which in other fields of science, such as astronomy, has given such wonderful results. Most of our present knowledge of the universe has been built up by such methods, and to say that they are unprofitable in advancing our knowledge of things that cannot be directly observed does not seem warranted by the facts. His statement that the somatic mutation theory, even if correct, "offers no prospect of further advance in knowledge" is a curious one to be put forward by a scientist. I have always believed that science is the pursuit of knowledge for its own sake, and that the true scientist is not concerned with the results that may accrue, and which in any event are quite incalculable. Could Newton or Volta have had any idea of the results to which their discoveries would ultimately lead? I am convinced that the somatic mutation theory will prove to be the true explanation of the change occurring in a normal cell which results in malignancy. No facts which disprove this have yet been brought forward, nor does Dr. Gye offer any.—I am, etc.,

London, W.1, March 30. J. P. LOCKHART-MUMMERY.

Results of Radiotherapy

SIR,—From the letters on radiotherapy which have recently appeared in your columns, a few points emerge which appear to me to need emphasis. One of your correspondents infers that radiotherapy merely converts a painless disease into a painful one. Another quotes excellent results in similar cases but achieved without pain. Now, any doctor who has watched his patients die of cancer knows how painful death can be apart from treatment, whereas severe pain caused by radiotherapy is not often seen in expert hands.

It is surely as unreasonable to judge radiotherapy by its worst results as it would have been to judge surgery in its early days. Many operations have now been proved to be useful, although at first they were associated with much pain and a high mortality. It seems to me impossible for anyone, however critical, who takes the trouble to visit a few of the chief centres at home and abroad, not to be deeply impressed by the remarkable results obtained by leading exponents, and often with little or no discomfort to the patient.

The fact is that at the present time there is a dearth of first-rate radiotherapists. The need for continued research has already been emphasized, but this comparatively new field of enormous promise is not attracting enough of the best type of men. The reasons are various, and include the question of status as well as finance, but until these difficulties are faced and solved there will remain this great discrepancy between the results of radiotherapy obtained at different centres.—I am, etc.,

London, W.1, April 5. REGINALD HILTON.

The Mechanism of the New Chemotherapy

SIR,—Your leading article on this subject (March 5, p. 522) was, I think, unintentionally misleading on one point—a point of some importance. Referring to Levaditi's hypothesis that both red prontosil and sulphanilamide are changed in the body into some more active substance you say, quite rightly, that this was based upon the "fact that the drug is ineffectual in experimental intraperitoneal infections if given by the same route. It saves life only when given by the mouth or parenterally." A recent experiment of my own seems to show clearly that this is not the case; mice can be readily saved by the drug if it is administered intraperitoneally in repeated doses. (It appears from Levaditi's paper[1] that he gave only a single dose.)

Experiment.—A culture of streptococcus (about 100 m.l.d.) was injected into the peritoneum of ten mice. Two hours later sulphanilamide (10 mg.) was given by the same route to five of them, and subsequent doses (7.5 mg.) at ten, twenty-four, forty-eight, and seventy-two hours. The five untreated animals died within thirty-six hours. The treated mice were never very ill, soon recovered, and survived in good condition for twenty-one days, when they were killed. No haemolytic streptococci were recovered from their spleens or peritoneum.

In the light of this result one may well hesitate to accept Levaditi's conclusion without further evidence.

May I make one other slight correction? You state that Tréfouel, Nitti, and Bovet "asserted" that red prontosil "is broken down in the body" into sulphanilamide. Actually these authors—to whom all honour is due since we owe to them the introduction of sulphanilamide and many other contributions to this new chemotherapy—only suggested the *probability* of this breakdown of prontosil into sulphanilamide. It was my colleague, Dr. Fuller,[2] who brought forward the evidence that it did occur.

In conclusion I entirely agree with you that at the present time the experimental data at our disposal do not warrant any final conclusion as to how red prontosil and sulphanilamide exert their curative effects.—I am, etc.,

London, W.6, April 1. LEONARD COLEBROOK.

SIR,—The medical profession all over the world is to-day under the impression that all kinds of streptococcal infections can be cured by prontosil and its derivatives. Experiments in mice and clinical reports agree on this point, but the mechanism of its action has not been determined as yet; the effect is attributed to a certain bacteriostatic action. For the last two years my work has been chiefly an attempt to determine: (1) other forms of its action than the bacteriostatic effect; (2) why certain cases do

[1] *Monographies de l'Institut Alfred Fournier*, No. 5, Paris, 1937.
[2] *Lancet*, 1937, 1, 194.

not respond to sulphanilamide in spite of large doses; and (3) what other factors assist in the success of sulphanilamide therapy.

When, in collaboration with Dr. Eva Stege-Schreiber, I synthesized a highly soluble sulphanilamide compound I found the following: (1) Sulphanilamide has a direct action on the body of the bacterium and destroys its structure. (2) In the test tube growth of streptococci in blood of sulphanilamide-treated patients is inhibited; in prontosil broth growth is not inhibited, merely the virulence is attenuated and the toxin production inhibited. (3) Sulphanilamide inhibits the formation of toxin in the organism. (4) Sulphanilamide does not neutralize already present toxins. Consequently we can say that: (1) in the mouse sulphanilamide is highly effective against infection with small doses of strongly virulent streptococci. (2) Sulphanilamide exerts a weaker action against infection with large doses of less virulent strains. (3) It has little effect against streptococcal infections in guinea-pigs induced by infection with highly toxic full cultures. (4) Also in these animals sulphanilamide is highly effective in combination with antitoxic streptococcal serum.

Applying these experimental experiences to severe cases of human streptococcal infections with already existing intoxication (as, for instance, puerperal fever) I observed the following: (1) Sulphanilamide acts only in organisms which possess a certain natural resistance. Therefore its action can only be explained as a co-operation of drug and organism. (2) Cases which do not respond to sulphanilamide may be cured by additional treatment with antitoxic streptococcus serum; the same holds true for cases not responding to serum treatment, which may recover by adding sulphanilamide. (3) Inasmuch as the chemotherapeutic agent can only exert its action under co-operation of the natural defence system of the infected organism, this resistance must be supported by all possible means (immune transfusions, vitamins, etc.).

The toxic by-effects of sulphanilamide can be avoided by combining serum and sulphanilamide, because this combination makes the reduction of the sulphanilamide dosage below the point of danger possible. Since I feel that the combination of two good therapies into a perfect one—instead of substituting one for the other—is a very important factor in our fight against puerperal fever and all other forms of streptococcal septicaemia, I should appreciate your bringing this letter to the attention of the medical profession.—I am, etc.,

New York, March 21. FRITZ MEYER, M.D., Prof. Dr. Med.

"Gonococcus Antitoxin" for Gonorrhoea

SIR,—Dr. T. Anwyl-Davies (*Journal*, March 26, p. 701) seems to forget that what he calls adjuvant treatment is the recognized, official, and orthodox "cure." So that when he says that "at the present time irrigations, dilatation, prostatic massage, etc., are also carried out" he means in effect that patients are subjected to two entirely different types of treatment or "cures" simultaneously—the orthodox and the specific antitoxin treatment. His comparison of the orthodox treatment of gonorrhoea with the treatment of diphtheria has already been adequately dealt with by me (February 20, 1937, p. 415) and by E. T. Burke and others (April 2, 1938, p. 755).

However, the important point is that Dr. Davies by his dismissal of the orthodox cure as simply adjuvant treatment has failed in the very crux of the matter—the critical comparison of the two treatments or "cures." In his reply to my first letter Dr. Davies (March 6, 1937, p. 525) admitted that "some of the cases quoted had no other treatment, others were treated along routine lines." This is the way in which my criticism was "readily answered." No attempt was made at a critical and detailed comparative analysis nor was any mention made then of its being "inadvertently omitted." Therefore I submit that when a confession that "irrigations, dilatation, prostatic massage, etc., are also carried out with this end in view, although in my preliminary paper this procedure was inadvertently omitted from the text" is made, Dr. Davies's technique is made manifest in all its inadequacy. How can the very kernel of a clinical investigation—that is, the evaluation of new methods as against the old—be omitted and disposed of by declaring that the controls were "inadvertently omitted." One can pass over the absence of detail but never the absence of essentials. The absence of essentials denotes, in my submission, the absence of method, and herein lies probably part answer to the discrepancy in the results found by Dr. Davies with those recorded by E. T. Burke and the three other investigators (March 19, p. 605).—I am, etc.,

Enfield, April 2. W. LESTER.

Treatment of Burns and Scalds

SIR,—In the excellent paper on the treatment of burns and scalds by Mr. Philip H. Mitchiner (*Journal*, January 1, p. 27) a typographical error appears in the paragraph on silver nitrate. I believe the author was quoting from my paper in the *Archives of Surgery* (1937, **35**, 478). He states:

"The patient having been given a dose of sedative, and the area of the burn being cleansed as already described under the tannic acid treatment, the whole of the burn area is painted or sprayed once with a 1 per cent. aqueous solution of gentian violet and is thoroughly swabbed over with a 10 to 15 per cent. solution of silver nitrate, care being taken that the silver nitrate does not escape over the surrounding skin. The area is now again sprayed or painted with a 10 per cent. solution of gentian violet. . . ."

This last sentence should read, "with a 1 per cent. solution of gentian violet."

One other statement which is somewhat misleading is: "from the use of this method the American authorities report a mortality of 7.3 per cent. . . . This is considerably higher than that from weak tannic acid solution, as might be expected when one realizes that in the case of extensive burns the silver nitrate coagulum does not extend into the deeper damaged tissues." In my article the mortality rate of 7.3 per cent. was based on the treatment of ninety-five patients during the experimental period in which we were changing over from tannic acid to the combination of silver nitrate and gentian violet and working out a new technique. When the hospital routine had been properly worked out the next eighteen patients that required admission were treated on the combination treatment with no deaths. The statement made by Mr. Mitchiner that the silver nitrate coagulum does not extend into the deeper damaged tissues explains why skin grafting is rarely, if ever, necessary with my combination treatment. Tannic acid cannot be soaked off as readily as can the silver-nitrate-gentian-violet coagulum. Thus surgical removal of the tannic acid crust destroys the epithelial islands, which if left will spread and invariably make skin grafting unnecessary.—I am, etc.,

Detroit, March 19. HIRA E. BRANCH.

Treatment of Boils and Carbuncles

SIR,—Mr. J. Hosford, in his article in the *Journal* of February 19 (p. 400) on the treatment of boils and carbuncles, mentions a great variety of treatments, including short-wave diathermy. He does not mention infra-red irradiation, which gives excellent results in the treatment of carbuncles and has a marked analgesic effect. Nearly all practitioners using electrotherapy possess some sort of infra-red ray apparatus, which is therefore more easily available for the treatment of boils and carbuncles than the costly and complicated short-wave diathermy machines, which are not standardized as yet. The following case may illustrate the value of infra-red irradiation in the treatment of a large carbuncle:

A man, aged 58, was seen on November 17, 1937, with a large carbuncle on the back of his neck. He had no glycosuria. I started to treat him with infra-red irradiation on the same day; he received daily administrations of forty to forty-five minutes each. No other treatment was given, except that the skin around the carbuncle was cleaned with ether before treatment and ung. hydrarg. ammon. dil. was applied round it after the treatment, and covered with a light pad of gauze and cotton-wool. The patient felt immediate relief after the first treatment, and his neck movements were more free. The discharge became much thinner after two days' treatment and the core separated on November 25. The wound was almost completely closed on November 29. Considering that the carbuncle was about 3 inches in diameter, the final soft scar a quarter of an inch in diameter represents a good cosmetic result.

I have treated during the last twelve months two other carbuncles, including one facial one, in the same way and with the same excellent results. I do think, therefore, that infra-red irradiation should occupy an important place in the treatment of boils and carbuncles. Its application is simple and not costly, and the results are quick and excellent.—I am, etc.,

South Norwood, S.E.25, March 27. A. FREITAG.

Pasteurization of Milk

SIR,—The letter of Dr. Halliday Sutherland (March 26, p. 704) is like a refreshing breeze in the stale atmosphere of the milk-spoilers. He makes eight points which may well rally the believers in fresh milk. The eighth is expressed as a suggestion that it would be wise to test the effects of pasteurization on the fertility vitamins. Like Sir Leonard Hill, he sees depopulation on the horizon. Pasteurization, he implies, would accelerate it. There is little doubt that the implication is right. The two experiments of E. C. V. Mattick and J. Golding at the National Institute for Research in Dairying at Reading University (*Lancet*, 1931, **1**, 662) revealed that rats receiving raw milk were in their fourth generation at the time of reporting and showed no falling off in their rate of growth, whereas none of the third generation of a precisely similar group fed on freshly sterilized milk lived for more than a day. In a third group receiving sterilized milk which had been kept in a cold cellar for twenty-four hours, none of the second generation lived to weaning. The matter is important. By all means let further experiments be made, as Dr. Sutherland suggests—though it is hard on the rats!—I am, etc.,

Holmes Chapel, March 27. LIONEL J. PICTON.

SIR,—Dr. C. O. Hawthorne (April 2, p. 753) has missed one point in my letter in the *Journal* of March 26 (p. 704). Although pasteurization may not affect the nutritive value of milk I suggested that it might affect the fertility vitamins. This point could be settled in a few months by feeding and breeding experiments on animals. Lady Lionel Guest in the *Daily Telegraph* of March 10 states that "cats and dogs, unless almost starving, refuse to drink pasteurized milk; even rats will not drink it willingly, and they are not famous epicures." If that be accurate the experiment might be tried on mice. As depopulation will soon be the most serious problem of our country I hope that someone will make the experiment on at least four generations of animals.

I regret that I misread Dr. J. Kirkland's letter, but I do not agree when he writes of "death-dealing germs that cannot be removed from raw milk except by pasteurization" (April 2, p. 754). The tubercle bacillus is absent from the milk of T.T. herds. Bang's disease (*Br. abortus*) can be eradicated from herds by the agglutination test and the slaughter of reacting animals. In America the Federal Government set up a scheme in 1934 whereby owners of reacting animals were compensated to the extent of fifty dollars each on pure-breds, and twenty-five dollars on grade cattle, provided the animals were immediately sent for slaughter.

As regards infection from human sources whereby both raw and pasteurized milk may be contaminated, this could be obviated, as Dr. F. R. Brown (April 2, p. 754) suggests, by the periodical medical examination of all dairy workers and those employed on pasteurization. Yet Dr. Brown is in error when he states that a tuberculosis "carrier could easily infect the cows as well as their milk" if he implies that the cows would develop the disease. Dr. Severi Savonen, Director of the Finnish Association for the Prevention of Tuberculosis, refers in the *Tuberkulosbladet* of March, 1937, to a recent discovery by Dr. R. Stenius, veterinary surgeon. He found that healthy, tubercle-free cattle when experimentally infected with tubercle bacilli from human sources gave a positive tuberculin reaction without developing the disease. Moreover, he found several cases in which dairy cows had been thus infected by persons suffering from open pulmonary tuberculosis. The cow is thus infected by tubercle bacilli of the human type and reacts to the tuberculin test, but when the consumptive attendant, the source of infection, has been removed from the cowshed the animals lose this acquired sensitivity to tuberculin and cease to react to the test.

The milk of a cow infected from human sources contains no tubercle bacilli unless—and there lies the danger—the milk is subsequently contaminated by the consumptive who infected the cow. By a closer study of tuberculin reactions in cattle it is now possible to distinguish between infection from bovine and human sources. A list of all cattle whose reaction to tuberculin indicates infection from a human source is sent from the State Veterinary Department to the National Tuberculosis Association. Every farm where these reactions have occurred is visited by one of the district tuberculosis officers, who examines and *x*-rays everyone in contact with the cattle in order that the infectious consumptive may be discovered and removed for treatment. In Britain I had known of search being made to discover a particular cow whose milk had caused the death of children, but never before have I heard of a search to find the consumptive who infected cattle.

The best news about our milk supply is the recent announcement by the Scottish Milk Board that within the next five years the full needs of consumers in Scotland will be supplied from tubercle-free herds. There is no reason why this scheme should not be extended to England. Then all your readers will be able to drink fresh, unpasteurized

milk, which possibly some of them have never tasted. Anyone can see the difference between rich, fresh milk and the anaemic, chalk-white stuff in the bottles, and anyone blindfolded can taste the difference.—I am, etc.,

London, W.8, April 2. HALLIDAY SUTHERLAND.

Trauma and Progressive Muscular Atrophy

SIR,—For the following reasons it appears unlikely at first that trauma plays any significant part in the aetiology of progressive muscular atrophy:

1. The fact that there is an age group (up to 25 years) in which females predominate; after this, admittedly, it occurs three times more frequently in males.

2. The fact that the bulbar type of the disease has not been reported to have followed injury—so far as I can ascertain.

3. The probability, as emphasized by Dr. G. F. Walker and Mr. D. Stanley-Jones (*Journal*, February 12, p. 360), that the injury occurs as a result of the subjective weakness and muscular cramps which often precede the onset of wasting and objective weakness, and the further probability that most patients could recollect an injury of some kind preceding almost any illness.

However, in the cases quoted by Dr. G. E. Frederick Sutton (January 29, p. 225) the injury would not fall into the last category. It was in every instance a severe injury which might well have caused "a molecular disturbance of brain or cord." In such cases one would not necessarily expect any correlation between the site of the original injury and the site of onset of the atrophy. In the cases where such a correlation does exist two explanations are possible:

(*a*) Thiemn's theory that a traumatic ascending neuritis ultimately affects the motor cells. The axonal spread of, for instance, anterior poliomyelitis might support this, but Dr. Sutton observes that "symptoms of neuritis are conspicuous by their absence in the history of practically all the cases of post-traumatic progressive muscular atrophy."

(*b*) The association may be coincidental, and in this connexion surely a statistical analysis of, say, 500 cases, which would no doubt be possible at the National Hospital, would reveal whether the incidence of conditions associated with, or precedent to, progressive muscular atrophy gave any significant prominence to injury. Association with previous anterior poliomyelitis is too well known and too pathologically probable to bear dispute, but in the case of injury the incidence would have to be high to acquire significance. It would also be very informative to learn whether the bulbar type of disease has ever followed injury. If not, why should it be exempt? The nature of the injury in the cases quoted would lead one to expect this type.

I recollect two cases of progressive muscular atrophy in a London ward at the same time, one with a history of infantile paralysis and the other with a history of wrist-drop due to lead poisoning. In both cases the limbs affected by progressive muscular atrophy were those affected by the previous lesion. Shortly afterwards I attended a necropsy on a case of progressive muscular atrophy which developed rapidly following exposure to a new industrial chemical, the potential toxic properties of which were unknown. Here again coincidence has not yet been excluded.

Dr. Sutton supports the view that trauma may render the motor cells susceptible to the subsequent attack of an unknown virus or toxin. If this is accepted the aetiological factors might be classified in some such way as the following:

The cells are rendered susceptible by (1) a hereditary predisposition (this might account for the early age group in which females predominate); (2) trauma; (3) previous infection—for example, acute anterior poliomyelitis; (4) present infection—for example, syphilis; (5) previous intoxication with a toxin known to have an affinity for the central nervous system—for example, lead; and (6) present intoxication with a toxin known to have been associated with one case, and the properties of which should be (and perhaps are being) investigated.

This still leaves the actual causative virus or toxin to be accounted for and would not explain why some cases associated with a positive Wassermann apparently become arrested with specific treatment, unless in these cases the spirochaete is the final causative agent; of this there is, I believe, no pathological evidence.—I am, etc.,

N. Nigeria, March 3. A. L. CRADDOCK.

Sequelae of War Gas

SIR,—The high mortality rate among ex-soldiers in certain age groups, as compared with the corresponding statistics for civilians who had had no war service, is referred to in the *Journal* of January 1 (p. 51).

It is there stated that the mortality rates are from 45 per cent. to over 70 per cent. in excess of normal in different countries. It has been observed in New Zealand that the mortality statistics for respiratory diseases are 30 per cent. above normal in similar groups of ex-soldiers. It was suggested by Mr. H. Ramsbotham in the House of Commons debate on the matter that any revision of the Pensions Acts was impracticable. No such revision is necessary. What is required is a wider appreciation of the recent research work that has been done on war gas sequelae, and its application to ex-soldiers by clinicians who have had an opportunity of acquainting themselves with the clinical evidence.

The idea that all ex-soldiers with gas sequelae have persistent respiratory tract damage with symptoms suggestive of chronic bronchitis dies hard; such sequelae are seen principally in those damaged by vesicant gases. Another fallacy is the generally held opinion that all soldiers who developed gas sequelae necessarily had sufficiently severe symptoms at the time to warrant their evacuation as gas casualties. The slowly progressive degenerative lung changes following phosgene injury are also an unexpected and largely unrecognized war legacy. Phosgene lesions of the alveolar type with associated right heart insufficiency often escape the unwary clinician. Such cases have a high mortality rate from respiratory disease and will be found to be largely responsible for the high group mortality rate in question. Pensions departments the world over have been slow to appreciate and recognize the different types of gas lesions, with the result that they have been confounded by the recent statistical developments.

The full extent of the lack of appreciation that exists is well illustrated by a textbook recently published in the United States, *Chemicals in War*, by A. M. Prentiss of the Army Chemical Warfare Service. On page 680 it is stated that "gas produces practically no permanent injuries, so that if a man who is gassed survives the war he comes out body whole as God made him." The incidence of basal emphysema and cardiac rotation amongst ex-soldiers in the gas-exposed group in New Zealand is so high that the *x*-ray department at the Auckland Hospital has come to realize that only the widest films will accommodate the increased chest width.—I am, etc.,

War Pensions Appeal Board, Auckland, N.Z., February 11. W. N. ABBOTT.

Sodium Lactate for Diabetic Coma

SIR,—I have read with interest your annotation in the *Journal* of March 26 (p. 683) concerning the treatment of diabetic coma by the use of racemic sodium lactate.

I should like to point out the following error. Referring to Hartmann's article in the *Archives of Internal Medicine*, September, 1935, you stated that the third group was treated by "insulin, glucose, and racemic sodium lactate." No glucose was given. This was shown in Table 1 and Chart 3 of the above article. In another of Hartmann's articles (*J. clin. Invest.*, **11**, No. 2) he states "that the conversion of lactate into glucose is apparent from the uniform rise of the latter in the blood." His treatment of diabetic coma or acidosis is as follows:

10 c.cm. of molar sodium lactate per kilo. body weight
50 c.cm. of distilled water " " "
40 c.cm. of Ringer's solution " " "
2 units of insulin " " "

About 1/3 to 1/2 of the above fluid is given intravenously and the remainder subcutaneously or intraperitoneally.

In view of the suggestion as to the meagre possibility of harmful effects from the administration of sodium lactate, I should like to refer to the thirty cases published in the above journal. I have had three years of personal experience with this form of treatment at the St. Louis Children's Hospital, and the results have been extremely satisfactory. A paper giving details of about sixty cases of diabetic acidosis in which this treatment was instituted is soon to be published; no harmful effects were noted from the administration of sodium lactate. In addition to these, Hartmann has also obtained excellent results with the use of sodium lactate in acidosis due to nephritis, diarrhoea, dehydration, infection, and many other miscellaneous causes such as salicylate poisoning, etc.—I am, etc.,

London, E.1, March 26. JACK BASMAN.

Plantar Warts

SIR,—The frequency with which the treatment of plantar warts is discussed indicates the difficulty of successful therapy. I write to make a strong plea for surgical treatment by means of the high-frequency electrical current. By such means it is possible to excise warty tissue and surrounding structures and to coagulate and fulgurate the exposed basal area. Small isolated warts can be successfully treated by this method under a local anaesthetic. Novocain, 2 per cent., should be injected through a wide needle and the tissue surrounding the base of the warty lesions deeply infiltrated. This will give satisfactory anaesthesia and avoid the difficulties and pain which follow attempts to anaesthetize locally the base of the wart. Larger warty areas are best treated under a general anaesthetic. The previous failure of radium, *x* rays, chemical agents, and surgical excision makes treatment difficult and causes prolonged disability.

The disadvantage of treatment by high-frequency electrical currents is the long time required for healing of the exposed area; usually it takes five to seven weeks. High-frequency treatment prevents haemorrhage, however, and lessens the risk of infection spreading through the lymphatic and capillary vessels. Healing can be accelerated by exposure to ultra-violet rays. Two days after the warty area has been excised and the basal area coagulated and fulgurated by the electrical current the area is exposed to the rays of the quartz mercury vapour lamp and five normal skin erythema doses are applied. Local irradiation augments the blood supply, hastens the formation and separation of sloughs, accelerates the formation of granulation tissue, and stimulates healing; it also keeps the wound clean and sterile. Such local treatment is applied at intervals of two to three days until healing is completed. The treatment does not produce much "after-pain," and often patients can be allowed to get up and walk. As a precaution to prevent reinfection of warts I prescribe lin. pot. iod. saponis (*B.P.C.*) to be rubbed into the skin of the sole of the foot daily.—I am, etc.,

London, W., March 29. ALBERT EIDINOW.

Multiplicity of Special Diplomas

SIR,—A letter from a correspondent signing himself "H. M." appeared in the *Journal* of March 26 (p. 704). The letter dealt in general with the inadvisability of multiplying special diplomas in medicine, and the particular association which I represent was especially singled out for attack. We were, however, honoured by being placed in the dock in the company of the British College of Obstetricians and Gynaecologists. Personally, I am in agreement with "H. M.'s" general thesis, but this agreement is purely theoretical. Those concerned with the progress of a particular specialty must take the world as they find it. So long as special diplomas exist which are obtainable by examination, and so long as the profession and the public attach importance to these diplomas, it is incumbent upon any body of men who wish to raise and maintain a particular professional standard to see to it that their examinations compare favourably with those of other bodies. In his argument that examinations are useless "H. M." proves too much, because such a criticism must obviously apply equally to the qualifying degree, of which he has apparently such a high opinion. Whatever the disadvantages of examinations, no one has yet invented a satisfactory substitute. Examinations in medical subjects are certainly not of recent origin. Very stiff examinations were conducted at the various medical schools in the Middle Ages.

Your correspondent gibes at the original Fellows of both the College of Obstetricians and the British Association of Radiologists. In the case of the latter, foundation fellowships were awarded only to those who had already held the highest offices in the gift of their radiological colleagues, and it could scarcely be said that possession of the fellowship is of personal advantage to them. Your correspondent says that the Association "sets itself up to re-examine those who already possess a recognized diploma in radiology." It is necessary to explain that the diplomas in radiology obtainable in this country are awarded after a nine months' course of study open to any registered medical practitioner, so that they may be obtained within a year of graduation. These diplomas have fulfilled, and still fulfil, a useful purpose. Twenty years ago it was perhaps possible to acquire a fairly accurate knowledge of radiology, both diagnostic and therapeutic, in nine months. To-day both these subjects have so expanded that it is possible to acquire a groundwork only in such a limited time. Nevertheless it is a fact that many of the smaller centres throughout the country will be permanently unable to support a radiological specialist in each branch of radiology, and the existence of diplomas combining the two will continue to secure that men do not set up in practice in these important lines of work without adequate grounding.

When it comes to what we may call the higher walks of radiology such dualism is now rarely practicable. There

must be specialists in both radiodiagnosis and radiotherapeutics, and it is to secure the proper training and certification of such specialists that the Fellowship of the British Association of Radiologists has been instituted. The possession of a diploma is insisted upon because the two years' work demanded by the Fellowship is supposed to start where the diploma leaves off. Moreover, the examination includes general medicine, and surgery and pathology in their special relation to radiology, and the Association has been fortunate in securing the services of eminent persons as external examiners. The suggestion, therefore, that the Association sets itself up to re-examine persons who have already passed an examination of the same standard is an entirely false one. It must be remembered that undergraduate teaching of radiology has so far been negligible. The groundwork which is laid down in, for example, surgery at a medical school must be laid down in the postgraduate period so far as radiology is concerned.

"H. M." says that British medicine alone seems to find a multiplicity of special diplomas necessary. Perhaps he is right as regards the Continent, but America appears to be following our example as fast as possible. Within the last decade or so there have been instituted an F.A.C.P., F.A.C.S., and F.A.C.R. In addition to these an American Board of Radiology conducts an examination for a diploma which is obtainable only by those who have done five years' approved work after medical graduation. I would point out that this is exactly the total period of approved work after graduation demanded by the F.B.A.R. There are also in America boards of neurology, orthopaedics, and other special subjects. Whether or not any of these boards have yet instituted diplomas I do not know, but I venture to think it is highly probable that they will do so. In short, whether the tendency be good or bad it is one which permeates the whole English-speaking world, including the British Dominions.

Finally, your correspondent seems to feel it a grievance that special diplomas are usually required for important appointments. He should not, however, mix up the sequence of cause and effect. It is the governors of these institutions who decide that candidates must have certain diplomas, and they do so apart from any influence which may be brought to bear upon them by the examining bodies concerned.—I am, etc.,

F. HERNAMAN-JOHNSON,
Warden, Fellowship Board, British Association of Radiologists.

London, W.1, March 28.

Pneumonitis

SIR,—I was most interested in Dr. A. Morton Gill's paper on pneumonitis in the *Journal* of March 5 (p. 504). That pneumonia occurs in forms which differ widely from the classical descriptions of the disease has been known to all of us for some time. There is no doubt that many of these anomalous forms can be split into well-defined clinical and radiological entities, and it is surely time that we ceased classifying under the term "pneumonia" illnesses differing widely in their course and final outcome. Credit must therefore be given to Dr. Gill for his admirable description of the clinical and radiological entity to which the name "pneumonitis" may be given. Dr. J. G. Scadding, too, should be congratulated on his definition of chronic diffuse bronchopneumonia and disseminated focal pneumonia (*Journal*, November 13, 1937, p. 956). One more scrap-heap which has encumbered the progress of medicine is being removed.

Exception must be taken to Dr. G. S. Erwin's letter in your issue of March 26 (p. 705). He gives as his address the Brompton Hospital, and therefore it might be thought that his opinions carry an especial weight. Actually, however, he chooses several very minor points in Dr. Gill's paper and subjects them to rather nebulous scrutiny. Nevertheless, it is criticism such as this, written, one feels, in a rather carping spirit, which can do a great deal of damage to an excellent piece of work. It is to be noted that Dr. Erwin has no objections worth offering to the general substance of Dr. Gill's paper.

The following are the details of a case of pneumonitis recently seen in the out-patient department of the Hospital for Sick Children, Great Ormond Street. I am indebted to Dr. Lightwood for permission to record this case.

A female infant, aged 14 months, was seen at the beginning of December, 1937, with a history of an irritating cough for the previous two weeks. There had been no acute illness and the child had never been confined to bed. On examination she was a healthy-looking child with no respiratory embarrassment; her weight was 20 lb. and the rectal temperature was 99° F. The chest showed some dullness at the left base, where breath sounds were weak, and there were showers of sticky rales. Examination of the other systems revealed nothing abnormal. The Mantoux test, 1 in 1,000, was negative. A radiograph of her chest taken at this time showed mottled shadowing at the left base. A simple linctus was prescribed. When seen again a week later the mother said the child was very much better. One week after this the abnormal physical signs had cleared and a second radiograph showed that the opacity had completely disappeared. The child did very well and gained weight rapidly.

The points which I would emphasize are: First, the fact that there was never any question during the whole of the illness of admitting this child to hospital; she was treated quite satisfactorily as an out-patient. Secondly, though a 1 in 1,000 Mantoux test only was done, yet this, coupled with the rapid subsidence of the condition, in my opinion definitely rules out any question of tuberculosis.—I am, etc.,

London, S.W.18, March 28. C. HARDWICK, M.R.C.P.

SIR,—I was most interested to read the admirable paper on pneumonitis by Dr. A. Morton Gill. That such a condition exists as a clinical entity in children, in my opinion, cannot be disputed by anyone who has had experience in paediatrics. In adults the condition would appear to be a rare one. The following report may be of interest therefore:

On February 10 I was called to see a female diabetic, aged 55, who was complaining of cough and exhaustion. On examination she had a temperature of 99.4° F., a pulse rate of 90, and a respiration rate of 20, with some injection of the pharynx. There was impairment of the percussion note at the base of the right lung, but the breath sounds were vesicular; many rales were heard. She was put to bed and given medicine to control the cough. On the following day she had a severe haemoptysis. Evening pyrexia continued for ten days and then subsided; at the end of this time the physical signs were much less marked. Fourteen days after the onset she was quite free of all signs and felt quite well. During the illness her insulin requirements increased from 45 units to 50 units daily, but returned to 45 units on recovery. No tubercle bacilli were found in her sputum. She remains well.

The association of malaise, cough, evening pyrexia, and haemoptysis strongly suggests tuberculosis in a patient of this type. However, the complete and rapid recovery has led me to conclude that this was a case of acute simple pneumonitis.—I am, etc.,

Gloucester, March 29. D. C. REAVELL, M.D.

Aetiology of Acute Appendicitis

SIR,—In an article by Dr. A. M. Spencer in the *Journal* of January 29 (p. 227) it is stated that in the villages of India appendicitis is unknown. I am a beginner at surgery, but I can select from my records of civil surgical practice twenty-eight cases of appendicitis proved at operation in persons from Indian villages and small country towns. All the appendices were pathological, some were removed with difficulty owing to old-standing adhesions, others were perforated. All the patients were persons living on purely Indian dietaries, and some were vegetarians. I have excluded cases of appendicular abscesses and cases occurring in these natives partial to European foods.—I am, etc.,

R. D. MACRAE,
Coorg, South India, March 16. Captain, I.M.S.

SIR,—Dr. A. M. Spencer in his paper on the aetiology of acute appendicitis in the *Journal* of January 29 (p. 227) states that acute appendicitis is very common among the inhabitants of Tristan da Cunha. He also states that the diet of the inhabitants has an exceptionally low cellulose content. I have visited Tristan da Cunha twice and have made an examination of the inhabitants for H.M. Office of the Crown Colonies. From information obtained in the island it is very unusual for anyone to have symptoms suggesting acute appendicitis. When such symptoms do occur the only treatment that can be given is a dose of castor oil or Epsom salts. I was unable to obtain any facts regarding a death suggesting a perforated appendix.

As Tristan da Cunha has never had a resident physician a true diagnosis of any illness has never been obtained, so Dr. Spencer's statement is made without proof. Regarding the diet, the staple article is potatoes. Fish is plentiful, and during the nesting season penguin and albatross eggs are obtained in great numbers. Turnips, carrots, and cabbage are to be had but are not plentiful.—I am, etc.,

E. F. D. OWEN.
R.M.S. *Empress of Australia*, at Sea, March 22.

Chronic Littritis

SIR,—In the *Journal* of March 26 (p. 703) Dr. R. C. Webster has replied to some of the points raised in my letter on chronic littritis (March 12, p. 594), but it is disappointing that he has not commented on the fundamental difference which exists between our respective views on the production of this condition. I submitted that "acute infection of the glands of Littré, in varying degree, is commonly associated with acute urethritis," and reference to *Gonorrhoea and Its Complications* (3rd edition, Baillière, Tindall and Cox, 1922), in which the pathology of acute urethritis is authoritatively described by Georges Luys, will confirm this statement. It is therefore logical to conclude, as I have done, that "the production of chronic littritis is dependent on failure to promote and maintain adequate drainage of the infected glands and ducts."

Dr. Webster has explained his interpretation of the production of chronic littritis in the following statements, extracted from his original paper (*Journal*, February 26, p. 448). (1) "The essential factor in causation appears to be improper treatment—that is, treatment in which the urethra is exposed to fluids at high pressure"; (2) "the patient using a hand syringe can readily produce very high intra-urethral pressure"; and (3) "in many cases from six weeks' to three months' use of the hand syringe is sufficient to produce chronic littritis." Surely the correct interpretation of the latter time limits depends on the fact that chronic littritis can only be diagnosed after the acute urethritis has abated. This theory of high pressure implies that infective material is forced into the ducts and glands of Littré, and although I cannot disprove this statement personally Luys states: "The organisms within them (the glands of Littré) defy all irrigations, injections, and instillations, as the fluids used fail to reach these recesses." This explanation by Dr. Webster of the production of chronic littritis is in opposition to the known pathology, contains no practical proof that the patient using a hand syringe does actually produce very high intra-urethral pressure, and, to my mind at least, is unconvincing.

When cases of acute urethritis are properly and regularly irrigated with suitable solutions by means of a douche-can chronic littritis seldom develops, as the regular lavage and distension of the urethra prevents obstruction of the ducts and thus allows satisfactory drainage of the infected glands. Dr. Webster admits that "the capacity of the ordinary syringe is relatively small, so that the urethra is washed with small quantities of fluid at a time," and it is this fact which explains the high incidence of chronic littritis in patients who treat themselves with a hand syringe. I am convinced that high intra-urethral pressures are not produced by the patient irrigating himself with a hand syringe, and the results of the following experiment on a cadaver may be of interest in this connexion.

The urethra was tied off immediately anterior to the membranous urethra to represent the action of the sphincter in life, and the horizontal limb of a T-shaped glass cannula was introduced into the urethral canal so that the perpendicular limb projected through the urethral wall three inches from the meatus. A manometer, which recorded the intra-urethral pressure by supporting a column of water, was attached. The pressure obtained by irrigating the urethra from a douche-can containing two pints of water fixed at a height of three feet above the urethra was compared with that obtained with a 10 c.cm. hand syringe, the diameter of the nozzle being the same in both cases. The mean of three estimations was recorded for each instrument, and the hand syringe produced a pressure of 16 inches while a pressure of 27 inches was obtained with the douche-can. On all occasions the junction of the nozzle with the meatus was perfect, and in the case of the hand syringe the piston was forced down as strongly and as rapidly as possible.

It appears justifiable to compare the figures obtained, although no value is claimed for them as absolute estimations, and it is safe to say that the pressure obtained with the hand syringe in these experiments was higher than that which could be achieved by the patient himself, due to the difficulty which he must experience in manipulating the piston and concurrently maintaining an efficient junction between the nozzle and the meatus.

Dr. Webster misquotes me when he credits me with the statement, "Failure to promote and maintain adequate dilatation of the urethra," and I seriously question the accuracy of his reproving remark that "the normal function of the urethra is to pass fluids at low pressures; hence the use of high pressures in treatment is unphysiological." If this statement is true it must be "unphysiological" on our part to tell patients suffering from gonorrhoea to drink as much water as possible, for the normal stream of urine on micturition, even through a large meatus, in patients in whom the water intake is considerable is not suggestive of a low intra-urethral pressure!—I am, etc.,

Liverpool, March 31. SYDNEY M. LAIRD.

Weil's Disease

SIR,—Dr. R. Naftalin (*Journal*, March 19, p. 621), in describing a fatal case of Weil's disease, mentions the widely different figures for fatality rates, and suggests that these differences might be accounted for by difficulties in diagnosing atypical cases; this is undoubtedly true. How far the prognosis can be influenced by the use of anti-leptospiral serum is another important speculation. The paucity of records bearing on this question suggests that serum is not largely used. It would appear, however, that when used prophylactically or in the early stages of an infection, experimentally or clinically, the serum now available is of the greatest benefit against the strains of leptospira met with in this country, although in the later stages of the disease the evidence of its value is perhaps not so clear. Nevertheless, now that anti-leptospiral serum can readily be obtained it seems worth while, in view of the difficulty of forecasting the course of any case of Weil's disease, urging that specific serum be used as early as possible in every case of this infection.—I am, etc.,

London, W.1, March 28. F. MURGATROYD.

Foreign Colleagues in Distress

SIR,—In your issue of March 26 (p. 705) eighteen British medical men comment on the situation in Austria and urge "colleagues in all countries to watch the progress of events with the closest attention and to do all in their power, whether by public protest or by public or *private assistance*, to stand by any members of our profession who may suffer hardship under the new regime."

It is not, I fear, too cynical to hold that the two words I have italicized in this quotation are the only ones of value. More eminent men than even our eighteen colleagues have produced not less eloquent protests during the last five years. The feelings of the eminent authors have been relieved, perhaps *our* feelings have been vicariously relieved; that is all. The relief of misery requires personal sacrifice. Perhaps the time will soon come when a conflict of professional self-interest and Christian charity may be rather grim; but there is an intermediate stage. The Society for the Protection of Science and Learning (formerly Academic Assistance Council) has worked for the salvation of oppressed scholars and scientists during the last five years. Medical scientists have formed a considerable proportion of our clients and, as we do not concern ourselves with practitioners but with displaced academic workers, questions of mere professional competition do not arise. No "patriot" can truthfully accuse us of taking bread out of an English mouth to fill the belly of a "foreigner." What we have done has been to help persons well fitted to advance medical knowledge to continue to do so. Most of our subscribers have been themselves academic workers or teachers in schools, few of whom have news value and fewer still pay supertax. They have not written to the Press but they have sacrificed money and convenience. It is much easier to write letters than to fit a stranger guest into one's department, to beg here and there, to try to interest an influential but indifferent A or a very busy B in some piece of work, intrinsically good enough, but not made the best of by a shabby, anxiety-ridden foreigner speaking broken English.

Although I *am* writing a begging letter (of a strictly unofficial kind) I shall not follow the time-honoured practice of describing harrowing cases. In the first place they might be identified, and if so, the emotional cruelty of a child wielding the strength of a giant might be employed to torture in some petty way the relations of known persons. In the next place, I dislike being more emotional than I can help in public. To avoid that danger I will be flippant with G. K. C.

> "I know you vetoed at Earl's Court
> That brutalizing Billiard Show.
> Quite so . . . yes . . . yes . . . this so-called sport.
> Yes . . . so-called Christian . . . strikes a blow . . .
> Yes . . . so-called Twentieth . . . yes, I know,
> Degraded postures . . . player kicks
> The billiard-marker with his toe . . .
> —*But will you lend me two-and-six?*"

Few of us who can read and none of us who have been working for the cause these five years need to be urged "to watch the progress of events with the closest attention." What we need is to be given (not lent) two and six. Even postage stamps (saved from letters of protest addressed to you and other editors) would be thankfully received by the Society for the Protection of Science and Learning, 6, Gordon Square, W.C.1.—I am, etc.,

April 2. MAJOR GREENWOOD.

Corporal Punishment

SIR,—A letter from Mr. Victor Bonney appeared in the *Journal* of April 2. Was it to invite comment? The letter begins on one page and ends on the next, and as you turn the page you pass from thought which is proper to 1938 to that which characterized the ethics of perhaps the Stone Age. A brutal criminal has injured an individual and offended against social order. Can we seriously believe that the victim of such a crime would be solaced on his bed of suffering by imagining the corporal punishment of his aggressor? Happily, men have long ago realized that personal revenge has no place in a civilized community, and the community as a whole has taken in trust the interests of those who are wronged. In discharge of this trust we have inflicted corporal punishment up to the present time. If the best-informed opinion now tells us that it should be abandoned, we ought to be thankful that our more merciful feelings are sanctioned, and we should direct our aggressive action towards breaking down those social conditions which produce crime. I am not a lawyer, but is there not some confusion in Mr. Bonney's letter between the administration of justice in civil and criminal proceedings respectively?—I am, etc.,

London, W.1, April 4. GRACE NICOLLE.

The Council of the Royal Society of Arts (John Street, Adelphi, W.C.2) give notice that the next award of the Swiney Prize for a work on medical jurisprudence will be made in January, 1939, the ninety-fifth anniversary of the testator's death. Dr. Swiney left a sum of money to the Royal Society of Arts for the purpose of presenting a prize, on every fifth anniversary of his death, to the author of the best published work on jurisprudence. The prize is a cup, of a value of £100, and money to the same amount. The award is made by a joint committee of the Royal Society of Arts and the Royal College of Physicians, which appoints special adjudicators. The prize is offered alternately for medical and general jurisprudence, but if at any time the committee is unable to find a work of sufficient merit in the class whose turn it is to receive the award, it is at liberty to recommend a book belonging to the other class. On the last occasion of the award (1934) the prize was awarded for general jurisprudence. It will, therefore, be offered on the present occasion for medical jurisprudence. Any person desiring to submit a work in competition, or to recommend any work for the consideration of the judges, should do so by letter, addressed to the secretary of the society, not later than November 30.

Obituary

T. A. McCULLAGH, M.R.C.S.

By the death of Dr. Thomas Alexander McCullagh, J.P., D.L., at the age of 85, South Durham has lost an outstanding personality. The son of a distinguished Wesleyan divine—the Rev. Thomas McCullagh—he received his medical education at Guy's Hospital. After qualification as M.R.C.S., L.R.C.P. and a brief period of work in Liverpool and Swinton he went to Bishop Auckland in 1877, where he joined Dr. Jobson as junior partner, subsequently continuing in the same practice until 1923, when he retired from active work, though he continued his appointment of medical officer of health, held for many years, until 1937.

His interests were very numerous—riding, hunting, shooting, racing, golf, and walking—but in addition to these pursuits of the country doctor he was a great reader with a wide knowledge of general literature. Tall, of distinguished appearance and gentle manner, his was a great presence in the sick-room, and his reputation extended far beyond the area in which he worked. His practice included attendance on many county families in the more prosperous days of Durham county, and he was thus brought into contact with many distinguished figures in various walks of life—political, social, artistic—of whom he had many reminiscences. He was Deputy Lieutenant for the County of Durham under Lord Londonderry, and also one of the oldest members of the Bishop Auckland magisterial bench. In his early days he joined the old Volunteers as regimental surgeon and continued in that capacity as brigade surgeon lieutenant-colonel until that force was merged in the Territorial Force, in which he held the rank of lieutenant-colonel. He received both the Volunteer and Territorial Long Service Decorations. With his passing yet another of the old school of country doctors has gone, a type that is unhappily disappearing. Courteous, gentle, erudite, and yet with interests which enabled him to meet on their own ground any type of patient in his wide area, it was a privilege to meet him and an honour to know him well.

G. H.

The Bishop of Durham (Dr. Hensley Henson) writes:

When I came to live in Bishop Auckland nearly eighteen years ago I made the acquaintance of Dr. McCullagh, who had just retired from the active exercise of his profession and was living hard by the Castle Gates. We soon became fast friends and frequent companions. He was wont to take his "constitutional" in the Castle Park, and I often joined him. His interests in books, birds, and politics largely coincided with my own, and his long and intimate knowledge of the county gave a special interest and value to his conversation. He often borrowed books from me, and, unlike many borrowers, he always returned them. He was an omnivorous yet discriminating reader. More than most men whom I have known he combined the urbane manner and tolerant habit of a man of the world with the genuine piety and religious habit of a true Christian. He was indeed both. His long acquaintance with "all sorts and conditions of men" had made him take an indulgent view of normal humanity, but it had deepened his belief in Christianity as the deepest truth for man. His neighbours, very various in social type and condition, regarded him with affectionate respect. He was everywhere greeted with something more than normal heartiness. Bishop Auckland was proud of the stately old man, whose presence added dignity to the rather drab aspect of the town. His absence will be felt and lamented.

J. LOCKHART LIVINGSTON, M.D.

We regret to announce the death on April 2, after a long illness, of Dr. John Lockhart Livingston of Hursley, near Winchester. He was the senior partner in a firm practising at Hursley, Southampton, and Eastleigh, and had long been a prominent worker in the British Medical Association, enjoying the confidence of all his colleagues over a wide area.

After studying medicine in Belfast and Dublin Dr. Lockhart Livingston graduated with honours in 1886 as M.D., M.Ch., and M.A.O. of the Royal University of Ireland, and won a clinical gold medal at the Ulster Hospital for Children and Women. He was then house-surgeon for two years at the Bristol Royal Hospital for Sick Children and Women before settling in Hampshire, where he held for many years the appointments of medical officer and public vaccinator for the Hursley Union, medical officer of health under the Hursley Rural District Council, and medical officer to the Post Office. During his earlier years of practice he contributed clinical notes to these columns and elsewhere.

Dr. Lockhart Livingston joined the British Medical Association fifty years ago, and served, with one break, as representative of his Division at the Annual Representative Meetings from 1920 to 1935 inclusive. He was president of the Southern Branch in 1920 and chairman of the Winchester Division in 1922–3 and again in 1927–9. He had also been president of the Southern Branch of the Society of Medical Officers of Health.

Dr. FREDERICK THRESHER GRIFFIN, who died on March 17 at his residence in Southampton at the age of 75, was the son of the late Dr. R. W. W. Griffin of Southampton and grandson of the late Dr. Richard Griffin of Norwich and Weymouth, who was a pioneer in the founding of the Poor Law Medical Officers' Association. After leaving Epsom College he received his medical education at the University of Edinburgh, where he graduated M.B., C.M. in 1892, and after his father's death began to practise in Southampton. During the war Dr. Griffin was attached to the staff of the military hospital at Highfield. He was for many years medical officer to the Southampton Dispensary and to the Southampton Seamen's Orphanage for Boys. After the war he was actively engaged in work under the Ministry of Pensions, and for a time was chairman of the Medical Board for the Southampton area. A very keen sportsman in his earlier years, he was for long a member of the Hampshire Cricket Club, and had once the distinction of catching Dr. W. G. Grace in the deep field on the County ground. He had also played Rugby for Hampshire and the Trojans. He was an original member of the Old Shirley Golf Club and of Stoneham Golf Club. More recently he took up bowls, becoming a member of the County Bowling Club. He was a member of the Southampton Medical Society. Keenly interested in old china, he amassed a valuable and well-selected collection at his home in Winn Road. He leaves a widow and one son.

Dr. SAMUEL MOORE, one of the oldest medical practitioners in Leeds and a former member of Leeds Corporation, died at his home in Headingley on March 20. He was born at Newtownards, Co. Down, in 1863, and studied medicine at Belfast, graduating M.D. of the Royal University of Ireland in 1885 and M.Ch. with honours in 1886. After a short period as assistant at Denholme, Bradford, he moved to Leeds, and was appointed district

medical officer for Holbeck Union in 1897. Dr. Moore was a member of Leeds Corporation from 1910 to 1913, and had been deputy chairman of the Highways Committee. He joined the British Medical Association in 1889 and was chairman of the Leeds Division in 1922. For ten years he was vice-president of the Leeds and District Ulster Society. His son, Dr. John Moore, has been in practice with his father for some years.

Dr. JAMES WOOD, deputy mayor of Brighouse, Yorks, died on March 26 at the age of 68: he was mayor of the borough in 1935–6. Dr. Wood was born in Scotland, and received his medical education at the University of Edinburgh, graduating M.B., C.M. in 1895. He had practised at Brighouse for forty-one years, and was medical officer to the Smith Orphan Homes. He held office as chairman of the Halifax Division of the British Medical Association in 1927–8. At the funeral on March 29 medical men and members of the Town Council acted as bearers, and representatives of public bodies and many organizations attended the service.

Dr. RICHARD REGINALD SLEMAN, who died at his residence in Norwood on March 26, had a most distinguished record during the South African and the last war. He received his medical education at Cambridge and St. Mary's Hospital, qualified L.S.A. in 1888, and obtained the Durham M.D. in 1906. In the South African War he was surgeon major (senior medical officer) in the City of London Imperial Volunteers in 1900, and was present at the battles of Zand River, Dornkop, Diamond Hill, and Frederickstadt. He received the South African Medal with four clasps, and the Freedom of the City of London was conferred upon him. He had been an instructor in the Voluntary Ambulance School of Instruction, and received the proficiency certificate of the Army Medical Training School, Aldershot, with special mention, in 1897. He served with the rank of lieutenant-colonel in command of the 1st City of London Field Ambulance, and was A.D.M.S. of the 58th Division B.E.F. He was an Officer of the Order of St. John of Jerusalem, and had been awarded the Volunteer and Territorial Decorations, the Order of the White Eagle of Serbia (1917), and the Order of the League of Mercy in 1919. He was Deputy Director of Medical Services of the Malta Command in 1914 and 1915. Dr. Sleman was a vice-president of the League of the Order of Mercy and an inspector of hospitals for that League. He had been a member of the British Medical Association since 1891.

Dr. ARCHIBALD WILLIAM WALLACE DAVIDSON died on April 1 at his home in West Kilbride, whither he retired two years ago. He was born in Glasgow on May 28, 1875, the son of Alexander Davidson, and from Ayr Academy went to study medicine at the University of Glasgow, graduating M.B., Ch.B. in 1900. For more than thirty years he practised at Salcoats, Ayrshire, in succession to his uncle, the late Dr. Wallace, and was parochial medical officer for Stevenson. When he left Salcoats in 1936 the townspeople gave him a testimonial.

We regret to record the death in London on March 27 of Dr. HENRY REYNOLDS BROWN of Maldon, Essex. Born at Dunoon in 1868, the son of the Rev. George Brown, he was educated at the Lycée de Pau in France and the University of Edinburgh, where he graduated M.A. in 1890 and M.B., C.M. four years later; he proceeded M.D. in 1901. His earlier appointments included those of house-surgeon to the Edinburgh Royal Infirmary, junior assistant in the pathological department of Edinburgh University, and assistant physician to the Crichton Royal Institute, Dumfries, and Mavisbank Asylum. During the war he held the commission of captain in the R.A.M.C. and served in France from 1914 to 1917. He subsequently practised at Maldon, where he was medical officer of health of the urban and port sanitary districts and medical superintendent of the isolation hospital. He was also a J.P. for Essex. Dr. Brown had been for forty-six years a keen supporter of the British Medical Association. He was honorary secretary of the Mid-Essex Division in 1922–3 and chairman in the following year. He was a representative at the Annual Meeting of the Association in Portsmouth in 1923, president of the Essex Branch in 1929–30, and a member of the Rural Practitioners Subcommittee from 1931 to 1937 and of the Distribution Committee from 1936 onwards.

The death took place at his residence, Burnvale, West Calder, on March 28, after a short illness, of Dr. WILLIAM YOUNG, O.B.E., J.P., one of the best-known practitioners in the Lothians district. He was born in 1856 at Bathgate, and taking a medical course at Edinburgh University graduated M.B., C.M. in 1880. After periods of residentship in Glasgow Royal Infirmary and in the Royal Maternity Hospital at Glasgow, and postgraduate study at Vienna and Paris, he began practice at Addiewell, and later settled in practice at West Calder. There he continued in active work for fifty-two years. In addition to the cares of a large general practice, Dr. Young took a great interest in local public affairs. He attained the rank of major in the R.A.M.C. (T.A.), held the Volunteer Decoration, and in recognition of his services during the war received the O.B.E. He was also for many years keenly interested in education, and was a member of the West Calder school board and later of the Midlothian education authority from 1895. Joining the Midlothian County Council in 1910, he acted for some time as chairman of its public health committee and served on a number of its other committees until his death; he also did much to encourage a local pipe band. On completing his jubilee in practice two years ago, Dr. Young was presented by his patients and friends with a cheque for £300 and a silver salver. He is survived by his wife, four daughters and two sons, of whom one is an administrative medical officer under the London County Council.

The death is announced of Dr. MAGNAN of the Collège de France. He had for many years specialized in the study of flight and its application to the physiology of aviation.

The Services

HONORARY PHYSICIAN TO THE KING

Lieutenant-Colonel L. T. Poole, D.S.O., R.A.M.C., has been appointed Honorary Physician to the King with promotion to the rank of Brevet Colonel, vice Lieutenant-General Sir James A. Hartigan, K.C.B., C.M.G., D.S.O., who has retired.

ROYAL NAVY MEDICAL CLUB

The twenty-fourth annual dinner of the Royal Navy Medical Club will be held at the Trocadero Restaurant (Empire Suite), Piccadilly Circus, W., on Friday, April 22, at 7.30 for 8 p.m. Particulars can be obtained from the honorary secretary (Surgeon Commander M. B. Macleod, R.N.), Medical Department, Admiralty, S.W.1. Medical and dental officers who are serving, or have served, in the Royal Navy or Royal Naval Volunteer Reserve are eligible for membership of the club.

DEATHS IN THE SERVICES

Surgeon Rear-Admiral DONALD TEMPLETON HOSKYN, R.N. (ret.), of Ashbrittle, Somerset, died at Exminster on March 28. He was educated at University College, London, and took the M.R.C.S. and L.S.A. in 1879, the L.R.C.P. in 1882, and the M.B.Lond. in 1883. He filled the post of ophthalmic assistant at University College Hospital in 1878-9, and entered the Royal Navy in February, 1883, rose to the rank of surgeon rear-admiral on August 7, 1914, and retired in 1917 when surgeon of H.M.S. *Curacoa* on the Australian station. He received the thanks of King Malietoa and the Samoan Government for services to the wounded at Apia in the Samoan rebellion in 1894. He also served through the war of 1914-18, receiving the medals. After the war he held the post of deputy commissioner of medical services in the Bristol area under the Ministry of Pensions.

Medico-Legal

THE TITLE "DOCTOR"

The Medical Act, 1858, imposes a fine upon any person not on the *Medical Register* who wilfully and falsely pretends to be, or takes the title of, among others, a physician, doctor of medicine, or surgeon. The question of whether an unqualified medical practitioner who holds a genuine degree, awarded by a reputable university, of doctor in some other subject than medicine may call himself "doctor" has never been fully argued before the courts. In March, 1936, the Brighton magistrates, at the instance of the Medical Defence Union, convicted an unqualified practitioner who called himself "Dr. Deacon," but he had no good claim to the title. Recently the Union wrote to Miss Ethel Mellor, who practises osteopathy in Welbeck Street, as follows:

"Dear Madam,—My attention has been drawn to a card on which appears your name with the description or designation "Dr." preceding your Christian name. . . . In view of the recent decision which was secured at Brighton in the Deacon case, I should be glad if you will advise me that you will in future refrain from using this designation, which has been held to be an infringement of section 40 of the Medical Act, and which can be confusing and misleading to the public. Many other unregistered practitioners who are practising as osteopaths have already indicated their willingness to come into line with the recent decision, and have amended their plates and notepaper accordingly."

Miss Mellor sued the Union for libel, pleading that it meant by that letter, and by others which followed, that she had no right to her title of "Dr." and was unlawfully, wilfully, and falsely using it, implying that she was a doctor of medicine or a registered medical practitioner; that she was dishonourable; had no learning, qualifications, experience, or credentials; was actuated by base motives; and used the title of "Dr." for fraudulent purposes. She conducted her own case and proved that she was a doctor of science of the Sorbonne University in Paris and a doctor of osteopathy of an American college. Her doorplate bore only her name and the prefix "Miss," but she used a descriptive card which bore the name "Dr. Ethel Mellor, A.R.C.S., D.Sc., D.O., Osteopathic Practitioner," and her address. She did not allege that the letters of which she complained had been "published"—that is, brought to the notice of any third party other than the office staff of the Union—but complained that they were on the file for others to see. Mr. R. P. Croom-Johnson, K.C., for the Union, submitted to the Lord Chief Justice, who tried the case on March 28 and 29, that there was no case for him to answer, and Lord Hewart agreed. He said that the words complained of were not reasonably capable of a defamatory meaning, but even if they had been, on Miss Mellor's own admission they were published on a privileged occasion, and there was no evidence of any malice on the part of the Union. The action therefore failed, and it is difficult to see why it was ever brought. The question of whether the plaintiff's use of the title "Dr." is within the Medical Act or not remains open, but on the face of it there seems to be nothing about her descriptive card which could mislead anyone into thinking she is on the *Medical Register*.

A TESTATOR'S MENTAL STATE

A testator may suffer from serious mental disability and yet make a valid will. The working of the law in such cases was well illustrated recently when Mr. Justice Langton pronounced in favour of a will made by a testator whom he found to have suffered from a marked delusion on a certain subject, striking out only a part of one codicil which he held to be tainted with that delusion.[1] In a still more recent case heard by Mr. Justice Henn Collins, the brothers of a testator put forward a will for probate and his son sought to show that it was invalid on the ground that, owing to arteriosclerosis and cerebral haemorrhage, the deceased was not of sound mind, memory, and understanding, and did not know and approve the contents of the will.[2]

The family doctor said that four days after the will was executed he found the testator in a very confused mental state, with a childish manner, and diagnosed cerebral thromboses. Almost every time he saw the testator his conversation was abnormal: he thought he was in the thick of the Abyssinian war and that he was back in his soldiering days. He was very suggestible. Dr. J. G. Porter Phillips, stating his opinion on the evidence he had heard, said that persons suffering from cerebral thrombosis were able to pull themselves together and focus their attention on the subject-matter before them. He thought the testator's mind was, until two days after the will was made, disordered by arteriosclerosis and not by thrombosis. Dr. R. D. Gillespie, also giving evidence of opinion, said that the symptoms during the three months preceding the will showed a progression of the disease, and that he did not think he would himself have witnessed the will, but he would have been swayed by the circumstances of the testator's instructions and manner at the time. The testator might have formed a warped judgment and yet have understood what he was carrying out. The brothers, on the other hand, brought evidence to show that the testator had displayed considerable acumen in the matter of the will; had focused his attention on its terms for a full hour and had dealt lucidly with the questions which the solicitor had raised. He had said that he was making no provision for his son because his son was already provided for. There had been an unfortunate quarrel between father and son, and the father had formed the view that the son had taken a grasping attitude towards some of his property.

The learned judge pointed out that the question to be determined was one of fact and degree, and came to the conclusion that the testator knew and approved of the contents of the will. He was satisfied that the testator's view that the son was amply provided for was not an insane one. The real cause of the son's disinheritance was the quarrel: the son had taken a line which would have antagonized any father in the testator's position. There had been justification in the testator's mind other than a reason produced by disease, and he was satisfied that the testator was of sound disposing mind when he executed the will.

A LEGACY TO PROVIDE AMUSEMENT

In leaving money to charity it is as well to make sure that the institution chosen for the gift not only exists but is also capable of using the gift in the intended way. In a case reported in these columns some time ago[3] the testator made a substantial gift in his will to a non-existent institution. Recently a gentleman left £1,000 each to the Royal Hospital and Home for Incurables and the National Benevolent Institution, and directed the governors to use the income to provide some form of amusement to be settled by a committee of five patients.[4] The Royal Hospital, answering a summons in the Chancery Division to determine the validity of the gifts, said they were prepared to accept the legacy and carry out the testator's intentions. The treasurer of the National Benevolent Institution, however, declared that it did not possess any hospital or almshouse but provided small pensions for persons who lived in their own homes and could not be described as patients. Mr. Justice Simonds said that the question was one of construction. He felt justified in saying that the gift

[1] *Re* Bohrmann, *British Medical Journal*, 1938, **1**, 428 (February 19).
[2] The *Times*, March 16 and 17. North *v.* North.
[3] *British Medical Journal*, 1935, **1**, 809.
[4] *Re* Hovenden decd. The *Times*, March 16.

was made to a charitable institution and indicated a general charitable intention, to which was added a particular intention which could not be carried into effect by the National Institution. The gift prevailed, though the condition could not be fulfilled. No question arose out of the gift to the Royal Hospital.

The court will always apply what is called the doctrine of *cy près* in a case where there is a general intention to benefit charity although there may be a difficulty about the particular application of the terms in which the gift is made. It will carry the testator's intention into effect as nearly as possible. No one can doubt that in this case the learned judge took the wise and obvious course.

Medical Notes in Parliament

In the House of Lords, on March 30, the Royal Assent was given to the Blind Persons Act, the Population (Statistics) Act, the National Health Insurance (Amendment) Act, the Housing (Financial Provisions) Act, and to other Acts.

The Housing (Agricultural Population) (Scotland) Bill was read a first time in the House of Lords on March 30. In the same House, on March 31, the Street Playgrounds Bill was read a second time and the Dogs Amendment Bill a third time. Six Lords were appointed to a joint committee of both Houses on the Collecting Charities (Regulation) Bill.

On April 5, on the motion of Viscount Gage, Lord Addington and other Peers were appointed to join with a committee of the House of Commons to consider the Food and Drugs Bill.

The Army and Air Force (Annual) Bill was brought from the Commons on April 5 and read a first time. The Rating and Valuation (Postponement of Valuations) Bill passed through committee. The administration of Justice (Miscellaneous Provisions) Bill was read the third time and passed.

The House of Commons this week again discussed foreign affairs, and also read the Coal Bill a third time.

The Nursing Homes Registration (Scotland) Bill, "to provide for the registration and inspection of nursing homes in Scotland and for purposes connected therewith," was presented in the House of Commons on March 31 by Sir Douglas Thomson, supported by Major Neven-Spence, and was read a first time.

The Medical Services in Army Expansion

The Parliamentary Medical Committee, meeting at the House of Commons on April 5, with Sir Francis Fremantle in the chair, discussed the British Medical Association advertisements in favour of pasteurized milk. The Committee also considered the Infanticide Bill, the Food and Drugs Bill, and the Contraceptives Bill. Draft Aircraft Regulations, to prevent the communication of infectious diseases by air, came before the Committee.

General W. P. MacArthur, Director-General of the Army Medical Service, then spoke on that Service and on the medical side of Army expansion. He said the application of the scheme recommended by the Warren Fisher Committee for short-term medical commissions in the Army was working most satisfactorily. Of the first contingent of temporary officers all had applied for permanent commissions, and twelve out of fifteen had received them. The medical services of the Territorial Army were being brought back to full strength, with three field ambulances to a division. This proportion had previously been reduced to one. Provision was being arranged for other medical, dental, and nursing services to the Territorial Army. In addition twenty-nine Territorial General Hospitals were being organized and the necessary provision of material and personnel was well advanced. Difficulty was encountered in fitting in this Territorial provision with the medical side of schemes of air raid precautions under the Home Office. Other problems of co-ordination were satisfactorily adjusted by a co-ordinating medical committee under the Committee of Imperial Defence.

The Parliamentary Medical Committee then discussed with General MacArthur questions of nutrition, of diet, and of recruiting standards. They learnt that one proposal —never put into effect—from the Army Medical Reorganization Committee of 1902 was that the Director-General of the Army Medical Service should have a seat on the Army Council. This appeared no longer to be a special need, because the Director-General of Medical Services was constantly present at informal consultations with the heads of the War Office, and had the direct right of approach to the Secretary of State for War. The Committee was also told of new arrangements for provision of water lorries and water-purifying plant for troops.

Alleged Wrongful Detention under Mental Deficiency Act

On March 28 Mr. LOGAN asked the Minister of Health if his attention had been called to the case of a married man, aged 31, Territorial, who was arrested at the Ministry of Labour Office, Bootle, by two plain-clothes officers who informed him they had orders to detain him until an escort arrived from the asylum in which he had been incarcerated fourteen years ago, on the grounds that he had not been subject and amenable to proper supervision during the twelve years he had been at liberty; and what steps the Minister was taking to have the case reviewed with a view to releasing the man. Mr. BERNAYS replied that the Minister of Health had caused inquiry to be made in this case. The man was sent to an institution for mental defectives on July 10, 1925, on the authority of an order made under the Mental Deficiency Act, 1913. He was allowed to leave the institution on licence on December 22, 1926. The periods were extended from time to time until May 11, 1934, when the licence was revoked on the ground that its conditions had been broken. The patient was then treated as an escape from licence, and was eventually brought back to the institution on February 3, 1938. He was again allowed to leave the institution on licence on March 9. The Board of Control had reviewed the whole of the circumstances of the case, and as a result directed the man's discharge from the order under the Mental Deficiency Acts made in respect of him.

Mr. LOGAN: Is it not a fact that the patient has been sane all along, and that he was released last week solely because of the question being raised in the House, the examination having taken place only during the week? Is it not a fact, further, that this man has been away from an institution for twelve years, that he is considered to be mentally sound, and that the Territorial officers under whom he has been working say that he is perfectly sane? Will the Minister say what inquiry, if any, he intends to make if a man is considered to be insane and sent to an asylum and treated as a convict, and what compensation he intends to pay?

Mr. BERNAYS: Special reports were made in August last year about the case, and the specialists came to the conclusion that he was not a proper person to be detained in an asylum. It was within the discretion of the Board to accept that recommendation or not, and in fact they did not act upon it.

Mr. LOGAN said that in view of the outrage on public liberty he would raise the question on the motion for the adjournment of the House.

Workmen's Compensation Act Inquiry

On March 29 Mr. TINKER asked the Home Secretary if he was aware that the present method of medical referees under the Workmen's Compensation Act did not give satisfaction to the injured workmen, and that a change was suggested in the report of the Departmental Committee set up to inquire into the Workmen's Compensation Act, and

when he intended to announce the conclusions of the Government on the report.

Sir SAMUEL HOARE replied that the committee's recommendations involved important changes in the present system which could not be carried out without legislation, and he could not foresee sufficient time this session for legislation of this character. It would be an advantage to allow more time, not only for the Government but also for industry and for members of Parliament to consider the recommendations of the committee before legislation was formulated.

Bill to Regulate Sale of Contraceptives

Mr. R. J. RUSSELL, in the House of Commons on March 30, introduced a Contraceptives (Regulation) Bill "to regulate the public display in shops of contraceptives and matter descriptive thereof, to prohibit street trading in such articles, and to restrict the public advertisement thereof." He said he had found that of 280 chemists' shops only seven did not stock and distribute contraceptives. In addition a large number of shops dealt with contraceptives only. In one district he found thirty-six of these stores apart from the chemists' shops. In addition there was growing up through the country the custom of buying these things through slot machines outside chemists' shops, outside factories, and elsewhere. Inside factories and workshops touts furthered the sale of these articles. Country districts were infiltrated, and in almost every village someone acted as a tout for the display and sale of these articles. The Bill made it an offence to notify or sell these things to unmarried persons under 18 years, but there was nothing in it to stop the sale by chemists or from other stores conducted in a proper manner of contraceptives to those who needed them.

Mr. THURTLE opposed the Bill, and a division was called but not pressed. The Bill was then read a first time. Its backers included Sir Francis Fremantle, Sir Joseph Leech, Sir Henry Morris-Jones, Major Neven-Spence, Dr. Salter, and Dr. Howitt.

Health on the Training Ship "Caledonia"

Mr. DUFF COOPER stated on March 30 that the number of cases of scarlet fever and rheumatic fever among boys in the *Caledonia* [which is moored at Rosyth] since May 10, 1937, when the first entries were made, were seventy-four and thirty-one respectively. The number of cases of middle-ear disease to December 31, 1937, was twenty; since then there had been thirty cases of ear trouble, but how many were of middle-ear disease was not known. Seven boys suffering from rheumatism with heart complications had been sent to civil hospitals on shore. These numbers were not greater than were to be expected periodically in institutions of the type and size of the *Caledonia*. The amount of sickness there was declining. The position was carefully watched, and all the usual precautions to limit the spread of infectious disease were in force. Conditions on the *Caledonia* were modern.

Medical Officers in the Navy: Marriage Allowances

In reply to Sir John Anderson, who asked about the extension to officers of the medical branch of the Royal Navy of the privilege of marriage allowances, Mr. SHAKESPEARE said on March 31 that it had now been decided that there was no reason for making any difference in the case of these officers. It had just been announced to the Fleet that they would receive marriage allowances under the same conditions as other naval officers.

Psychotherapy for Convicted Persons

Sir RALPH GLYN, on March 25, drew attention to a case on March 15 at Lewes Assizes when sentences of imprisonment were passed on two persons in spite of medical testimony on the need for these persons to have psychological treatment. Sir Ralph asked whether the Home Secretary would consider, after consultation with alienists, an institution where cases could be dealt with which were aggravated by prison treatment. Sir SAMUEL HOARE replied that psychological treatment of prisoners had been the subject of a special investigation by his medical advisers during the last few years. They hoped shortly to present a report. When this report had been received he would be in a better position to consider the general problem.

Foot-and-Mouth Disease

On April 4, Mr. W. S. MORRISON, replying to Brigadier-General Clifton Brown, said that the recent outbreaks of foot-and-mouth disease began in October, 1937. The disease was successfully eradicated by the middle of January in the group of outbreaks affecting Wiltshire and adjoining counties. Fresh centres of disease appeared in Wiltshire (Calne district) on March 26, in Glamorgan (at Pengam) on March 27, and during the week-end at Birmingham and Nottingham and in Northamptonshire. There was reason to suppose that infection might have been present in, and distributed from, Banbury market on March 24, and, if this was confirmed, a serious situation would have arisen in view of the extensive distribution of stock from that market.

Notification of Measles.—Sir KINGSLEY WOOD, replying to a question on March 22, said that his attention had been drawn to the fact that during the ten years from 1927 to 1936 there was an annual average of 527 deaths from measles in London alone. The question of making all cases of measles compulsorily notifiable had recently been under consideration by the London County Council, and he had informed them that he would be prepared to entertain an application for the making of regulations in regard to the notification of measles in London.

Nursing Profession: Conditions of Employment.—Sir KINGSLEY WOOD told Mr. Bull on March 24 that the information at his disposal did not enable him to state the pay, the arrangements for the provision of uniforms and board, the usual bathroom accommodation, the number of paid holidays, and the days off and week-ends enjoyed by each class. These were among the matters under investigation by the Interdepartmental Committee sitting under the chairmanship of the Earl of Athlone and would be fully dealt with in that committee's report.

Supply and Disposal of Skimmed Milk.—Lady ASTOR asked, on March 24, whether Mr. W. S. Morrison knew that the Food Council in a recent report condemned the waste of six and a half million gallons of skimmed milk. In view of the stress laid upon its value as a nutritive food by the Advisory Committee on Nutrition, she asked what action was contemplated to avoid this waste in future. Mr. MORRISON replied that he knew of the statement by the Food Council, but thought the estimate of gallons should be accepted with reserve. The supply of skimmed milk was inconstant, since it depended upon the varying quantities of whole milk available for manufacture into butter and cream, and it was in greatest supply when the overflow of whole milk from the liquid market was largest. Moreover, many manufacturers had no facilities for converting skimmed milk into a product which could be conveniently stored, handled, and transported. The problem was largely one of finding a steady sale for a highly fluctuating quantity and no satisfactory solution had been found. If skimmed milk were sold for liquid consumption the price would be almost as much as for whole milk. The Ministry of Agriculture desired that people should drink whole milk, not skimmed milk.

Attested Herds Scheme and Beef Cattle.—Mr. PRICE inquired, on March 24, if any assistance would be given to owners of beef cattle in connexion with the scheme for eradicating tuberculosis from the herds. Mr. MORRISON answered that under powers conferred by the Agriculture Act, 1937, it was proposed to extend the present Attested Herds Schemes as soon as practicable to enable payments to be made in respect of herds maintained primarily for beef production.

Infection from Public Telephones.—Major TRYON said on March 28 that he was advised, on responsible medical authority and as the result of extensive investigations in this country and abroad, that the risk of infection from the use of telephones was negligible. Post Office regulations provided for mouthpieces and receivers in public call offices to be cleaned with disinfectant at frequent intervals. In urban areas this process was carried out each weekday.

Health Conditions of Government Offices.—On March 28 Sir NICHOLAS GRATTAN-DOYLE asked the First Commissioner of Works what steps were being taken by his Department to bring the condition of Government offices into conformity with the standard required by the Public Health Act, 1936. Sir PHILIP SASSOON replied that the administration of the Public Health Act, 1936, was the responsibility of local authorities. The Act provided that a local authority might agree with the appropriate Government Department that any provisions of the Act should apply to a Crown property. He had received no application for an agreement in pursuance of this provision in respect of any Government offices.

Voluntary Hospitals: National Emergency Survey.—Mr. ROBERT MORRISON asked the Minister of Health on March 31 what was the purpose of the recent survey of voluntary hospitals carried out by his department; if the information was collected as part of the air raid precautions scheme; and whether it would be communicated to the local authorities. Sir KINGSLEY WOOD replied that the survey, which was not limited to voluntary hospitals, had been undertaken with a view to making the fullest use of the existing hospital facilities and extending them if necessary in a national emergency. The results of the survey would in due course be a matter for discussion with the local authorities.

On the same date Mr. GEOFFREY LLOYD said that a survey of hospital accommodation generally was being conducted by the Ministry of Health and the Department of Health for Scotland in co-operation with medical officers of health. As soon as that survey was completed the Home Secretary hoped to be able to advise local authorities as to the steps they should take to provide accommodation for serious casualties in air raids.

Notes in Brief

During 1937 3,028 persons were proceeded against in England and Wales for being under the influence of drink while in charge of a car and 2,469 convictions were recorded at courts of summary jurisdiction. In 166 cases the persons were committed for trial.

The Minister of Health has fixed appointed days for the operation of the overcrowding provisions of the Housing Act, 1936, in all the metropolitan boroughs.

A report by consulting engineers on a scheme of sewerage and sewage disposal for the tidal portion of the River Tyne is receiving the consideration of the local authorities concerned.

Sir SAMUEL HOARE announced on March 31 that the Government intended to introduce, with a view to its passage into law this session, a Bill relative to the conditions of employment of young persons in unregulated occupations.

Universities and Colleges

UNIVERSITY OF LONDON

Lieutenant-Colonel H. E. Shortt, M.D., Ch.B.Aberd., has been appointed, from April 1, to the University Readership in Medical Parasitology tenable at the London School of Hygiene and Tropical Medicine.

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY.—*Part I:* E. P. Allen, P. Beinart, J. W. D. Bull, A. G. S. Cooper, N. F. C. Hill, D. J. Hurrell, C. W. S. Jerram, B. Y. Mina, S. F. Oosthuizen, K. M. Rai, Philippa N. Vaus, H. H. Winterstein-Gillespie.

UNIVERSITY OF ABERDEEN

At a graduation ceremony, held on March 30, the following degrees and diplomas were conferred:

HON. LL.D.—Edwin John Butler, C.M.G., C.I.E., M.B., Ch.B., D.Sc., F.R.S., Secretary to the Agricultural Research Council; Gunnar Dahlberg, M.D., Director of the Institute of Medical Genetics, Uppsala, Sweden

D.P.H.—Mary E. Harrow, W. D. Wilson.

NATIONAL UNIVERSITY OF IRELAND

UNIVERSITY COLLEGE, CORK

The following candidates have been approved at the examination indicated:

D.P.H.—V. J. Dillon (first-class honours), T. P. P. O'Riordan (second-class honours), J. G. O'Brien, Helen P. Tracy.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

M.D.—A. A. Lisney, C. J. de V. Shortt.

FINAL MEDICAL EXAMINATION.—*Part I (Materia Medica and Therapeutics; Pathology and Bacteriology):* *S. Fine, *L. E. Morris, *D. Selman, †J. M'D. Dougan, †J. D. Whiteside, †H. D. Chomse, †B. S. Good, R. R. Hogg, E. R. F. Mellon, J. R. C. Holmes, A. H. Isaacson, P. C. Denham, A. Graham, K. T. Acton, Sheila Kenny, M. N. O'Riordan, W. B. Welply, T. H. Downes, M. H. Waters. *Part II, M.B.:* H. J. R. Henderson, D. G. Harrison, T. W. Hanna, J. T. Speidel, R. A. Lutton, W. J. E. Pietersen, L. I. Warnock, R. Brass, L. N. Lynch, J. E. Murphy, V. T. Williams. *B.Ch.:* †J. C. M'Neilly, †W. T. Kenny, †M. F. X. Slattery, H. M'V. Buchanan, T. P. Griffin, B. W. Hughes, W. J. E. Pietersen, H. J. R. Henderson, Stella M. Coen, M. C. Warnock, T. Fallon. *B.A.O.:* *T. L. Lawson, *H. A. Dougan, *F. H. Counihan, †R. Wilson, †B. Mayne, †G. E. Nevill, †J. C. de R. Sugars, †R. T. Burkitt, W. W. McGrath, J. W. Boland, D. M. R. Barry, Miriam A. Becket, J. G. Waugh, E. W. R. Hackett, Deborah Bloom, Mary C. Conlin, H. R. T. Devlin, Muriel Elliott, F. D. FitzG. Steede, W. C. Good, D. B. Taylor, S. L. Wray, R. S. MacL. Cooke, Emily E. E. E. Hill, J. W. Cathcart, W. A. J. Pike, G. D. Stevenson, T. W. Buckley, R. J. Grove-White, J. R. Murdock, D. A. Huggard, F. W. Parke, R. W. Temple, M. E. C. Balmer, D. B. George, J. L. Mans, D. K. Stewart.

DIPLOMA IN GYNAECOLOGY AND OBSTETRICS.—M. S. El Kinany, S. Ghosh.

DIPLOMA IN PUBLIC HEALTH.—*Part I:* Eveleen M. H. Scott, Charlotte F. Pike, B. P. P. Berney, J. L. O'Neill, F. Keane.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*Part II:* D. T. Bardon.

* With first-class honours. † With second-class honours.

SOCIETY OF APOTHECARIES OF LONDON

At a dinner held after the quarterly meeting of the Court of Assistants on March 22 Mr. Montagu Norman, Governor of the Bank of England, presented to the Society of Apothecaries a silver cup commemorating the Mastership of Dr. Arthur P. Gibbons, who was for eighteen years medical officer to the Bank. The cup has been designed and executed by Mr. Omar Ramsden. At its base are circled six medallions symbolical of the Art of Healing and the Art of Banking, and the base is engraved with the arms of the Society with an inscription recalling the occasion of this gift from the Bank of England to the Society of Apothecaries of London. The Master, Mr. Hugh Lett, in accepting the cup, expressed high appreciation of the honour conferred on the Society, and Dr. Gibbons added a few words of gratitude.

The following candidates have passed in the subjects indicated:

SURGERY.—H. B. O. Cardew, A. P. Morley, J. C. B. Nesfield, B. Oppenheim.

MEDICINE.—G. H. L. Bullmore, J. D. B. Perkins, E. F. G. Stewart.

FORENSIC MEDICINE.—G. H. L. Bullmore, L. L. Gottlieb, J. D. B. Perkins, E. F. G. Stewart.

MIDWIFERY.—P. C. Conran, E. L. Moll, E. S. Nicholson, T. E. Ooi, J. A. Taylor.

The diploma of the Society has been granted to G. H. L. Bullmore, L. L. Gottlieb, B. Oppenheim, and J. D. B. Perkins.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The following candidates have been awarded the Diploma of the College: B. H. Bakewell, S. G. Baldwin, V. M. Crosse, J. C. C. Dawson, F. L. Firkin, J. W. Hannay, J. C. Harvey, H. S. Lanceley, G. S. Lester, H. G. Miller, G. D. N. Milne, H. G. Rees, S. R. Saunders, S. Shrikhande, W. J. Stokes, M. Thomas.

No. 12

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 26, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 125 great towns (122 in 1937) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns (9 in 1937) in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	43	6	11	3	2	28	2	6	2	—		
Deaths		4	3				2	2				
Diphtheria	1,404	155	235	63	37	966	111	190	35	34	1,144	180
Deaths	27	8	12	1	1	27	3	3	2	1		
Dysentery	92	19	70		—	14	1	6		—		
Deaths			—	—	—			—	—	—		
Encephalitis lethargica, acute	3	—	1		—	7	—	1		—		
Deaths		—	1				—	—				
Enteric (typhoid and paratyphoid) fever	13	2	3	1	—	20	8	9	2	4	22	—
Deaths	1	—	—	—	—	1	—	—	—	1		
Erysipelas			74	6	6			80	5	4		
Deaths		—	1				1	1				
Infective enteritis or diarrhoea under 2 years												
Deaths	47	18	6	4	2	48	9	6	7	2		
Measles			1,495		80*			214		—		
Deaths	67	23	36	2	12	9	1	1	—	—		
Ophthalmia neonatorum	93	15	62		—	95	9	31		1		
Deaths												
Pneumonia, influenzal §	1,254	122	7	14	14	1,181	99	18	1	4	1,532	153
Deaths (from Influenza)	78	9	5	—	1	98	17	8	5	7		
Pneumonia, primary			235	6				226	3			
Deaths		25		34	23		28		27	12		
Polio-encephalitis, acute	1	—				1	1					
Deaths		—					—					
Poliomyelitis, acute	3	—	—		1	3	—	1		—		
Deaths		—	—				—	—				
Puerperal fever	2†	2	17	2	—	27	3	14	1	—		
Deaths		1‡					1‡					
Puerperal pyrexia	189	16	30		5	99	13	25		1		
Deaths												
Relapsing fever	1	—			—	—	—	—		—		
Deaths								—				
Scarlet fever	2,167	200	355	70	74	1,530	167	325	87	42	1,910	275
Deaths	6	3	2	—	—	3	1	2	1	—		
Small-pox	2	—	—		—	—	—	—		—		
Deaths	—	—	—	—	—	—	—	—	—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths			—	—	—			—	—	—		
Whooping-cough			94		7			563		4		
Deaths	13	1	1	1	—	33	7	20	4	—		
Deaths (0-1 year)	391	76	72	36	36	452	63	98	53	18		
Infant mortality rate (per 1,000 live births)	65	62				72	52					
Deaths (excluding stillbirths)	4,994	991	660	205	163	5,531	1,051	715	293	178		
Annual death rate (per 1,000 persons living)	12.3	12.5	13.5	13.8	14.4	13.8	13.1	14.6	20.0	17.0		
Live births	6,769	1,239	927	385	278	5,728	1,071	825	354	250		
Annual rate per 1,000 persons living	16.7	15.6	18.9	26.0	24.6	14.3	13.3	16.9	24.1	23.9		
Stillbirths	283	31				259	40					
Rate per 1,000 total births (including stillborn)	40	24				43	36					

* 76 cases in Belfast alone.
† After October 1, 1937, puerperal fever was made notifiable only in the Administrative County of London.
‡ Death from puerperal sepsis.
§ Includes primary form in figures for England and Wales, London (Administrative County), and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Diphtheria

Notifications of diphtheria in England and Wales show a decided drop since last week—1,404 cases against 1,556—while the deaths in the 125 Great Towns fell from 41 to 27. London did not share to any extent in this decrease, and the deaths rose from 5 to 8; similarly, in Scotland, while the notifications fell from 261 to 235, deaths rose from 8 to 12. In Ireland about the same levels of the previous week were recorded. Scarlet fever appears to be decreasing in England and Wales, the notifications having fallen from 2,307 to 2,167, while in London they rose from 189 to 200. Despite these decreases, both diphtheria and scarlet fever are much more prevalent in England and Wales than during the corresponding week in the previous nine years.

Pneumonia

Notifications of pneumonia (primary and influenzal) in England and Wales have fallen since last week—1,409 to 1,254—but in London there was an increase of 12 in the week over 110 reported in the previous week. The figures are below the median value for the last nine years in both England and Wales and London. Deaths from influenza in the Great Towns and in London and Scotland show slight increases.

Measles

In the 125 Great Towns there were 67 deaths from measles, compared with 66 in the previous week; of these, 23 (18) occurred in London, 5 (3) in Liverpool, 3 (6) in Manchester, 3 (6) in Plymouth, 2 (2) in Sheffield. The figures in parentheses denote the deaths during the previous week. The London epidemic continues, although possibly the peak has just been passed; 2,477 cases were reported from the L.C.C. elementary schools, compared with 2,456 last week and 2,521 in the previous week, and the average daily admissions to the L.C.C. fever hospitals were 103, against 94 last week and 101 in the previous week. The number of cases of measles under treatment in the L.C.C. fever hospitals on March 25 was 2,284, compared with 2,079 on March 18 and 1,892 on March 11; on March 25 there were in these hospitals 1,182 (1,211) cases of diphtheria, 844 (830) cases of scarlet fever, 312 (271) cases of whooping-cough. The figures in parentheses refer to the figures in the previous week. Notifications in the eleven metropolitan boroughs in which measles is notified were for the week ended March 26 1,315 (1,317), distributed in the different boroughs thus: Battersea 136 (142), Bermondsey 94 (60), Finsbury 28 (30), Fulham 53 (81), Greenwich 112 (111), Hampstead 105 (68), Lambeth 322 (377), St. Pancras 171 (143), Shoreditch 38 (31), Southwark 202 (204), Stepney 54 (70). The figures in parentheses denote the numbers for the previous week. In Scotland 1,495 cases were notified, compared with 1,547 in the previous week: the figures for Glasgow were 893 (1,037), Aberdeen 210 (107), Dundee 132 (115), Edinburgh 78 (90), Paisley 51 (55). The figures in parentheses refer to the numbers in the previous week. During the week there were in Scotland 36 deaths from measles, compared with 24 in the previous week; of these, 27 occurred in Glasgow and 1 in Edinburgh. In Northern Ireland there were 80 cases of measles, of which there were 76 in Belfast alone, compared with 106 and 98 respectively in the previous week, while the deaths were 12, of which 11 occurred in Belfast, compared with 8 (6 of which were in Belfast) in the previous week. During the week there were 2 deaths in Eire, both in Waterford.

Small-pox

In the week ended March 26 there were 131 cases of small-pox in Hong Kong and 131 deaths, compared with 236 cases and 192 deaths reported in the previous week. In the four-week period ended March 26 there were in Hong Kong 766 cases of small-pox, compared with 652 and 219 in the two immediately preceding periods. Over the same periods the figures were in Bombay 874 (491), 950 (545), and 608 (303) respectively; in Calcutta 848 (565), 431 (273), and 192 (146) respectively; and in Madras 204 (57), 248 (81), and 301 (82) respectively. The figures in parentheses refer to deaths in the same period.

Typhus

In the week ended March 19 there were in Morocco 372 cases, compared with 411 in the previous week; of these 78 (70) were at Casablanca, 122 (56) at Marrakesh, 20 (47) at Rabat, 6 (19) at Agadir. In the same week in Tunisia the number rose from 41 to 75, and in Egypt there were 85 cases reported, compared with 68 in the previous week.

Medical News

The House of the British Medical Association, including the Library, will be closed for the Easter holiday from 5 p.m. on Thursday, April 14, until 9 a.m. on Tuesday, April 19 (Library 10 a.m.).

The offices of the National Fitness Council have been transferred to 1, Queen Anne's Gate Buildings, Dartmouth Street, S.W.1. The telephone number is Whitehall 9060.

The Health and Cleanliness Council (5, Tavistock Square, W.C.1) has arranged a luncheon to be held at the Holborn Restaurant, W.C., on Wednesday, April 13, at 1 for 1.15 p.m. Lord Horder will be the guest of honour and Dr. G. F. Buchan, president of the Council, will preside.

The jubilee dinner of the Metropolitan Police Surgeons' Association will be held at 7 p.m. on April 28 at the Holborn Restaurant, with the president, Dr. Percy B. Spurgin, in the chair. Among those who have accepted invitations are: Sir Philip Game, Commissioner of Police, Sir William Willcox, Mr. Kenneth Marshall, Stipendiary Magistrate at Westminster, Mr. P. B. Skeels, H.M. Coroner, Mr. Lawrence Vine, Dr. G. C. Anderson, Secretary, B.M.A., and the Headquarters Medical Staff at New Scotland Yard. Metropolitan police surgeons can obtain tickets from the hon. secretaries, Dr. A. R. Moore, 174A, Boyson Road, S.E.17, or Dr. W. G. Johnston, *M.C.*, 44, Streatham Hill, S.W.

The Glasgow University Club, London, will dine at the Trocadero Restaurant, W., on Friday, May 27, at 7.15 for 7.30 p.m., with Professor E. P. Cathcart in the chair. Any Glasgow University men who, though not members of the club, desire to attend are requested to communicate with the honorary secretaries, 62, Harley House, London, N.W.1.

The annual meeting of the Industrial Health Education Society will be held at B.M.A. House, Tavistock Square, W.C., on Tuesday, April 12, at 4 p.m. The chair will be taken by Mr. Sydney Walton, and the speaker will be the Right Hon. Arthur Greenwood, M.P. (Minister of Health 1929–31).

In our advertisement columns this week the Board of Control invites applications for an appointment as Commissioner on the Board's staff. The salary commences at £850 per annum rising to £1,200 per annum.

A meeting of the International Society of Medical Hydrology was well attended at Leamington on March 30. Under the chairmanship of Dr. Frank Clayton several interesting papers were read by: Dr. Collins and Mr. Woodmansey (Harrogate), Professor Rother (Germany), Professor Pelczar (Poland), Professor Loewenstein (Austria), Dr. Reichart (Czechoslovakia), Dr. Najib-Farah (Egypt), Dr. Vaubel (Germany), Dr. Loring Swaim (U.S.A.), and Professor Phocas (Greece). The guests were entertained at luncheon by the corporation of Leamington Spa, and inspected the baths and gardens during the afternoon.

On April 6 Dr. Edith Summerskill (Soc.) was returned as Member of Parliament for West Fulham in the by-election caused by the death of Sir Cyril Cobb. Dr. Summerskill polled 16,583 votes and her opponent, Mr. C. J. Busby (Cons.), 15,162.

The Swiss Society of Internal Medicine will hold its annual meeting at Basle on May 14 and 15, when discussions will be held on Graves's disease and hyperthyroidism, and treatment of syphilis of the central nervous system. Further information may be obtained from the President, Professor G. Bickel, Rue Saint-Léger 2, Geneva.

The German Association of Internal Medicine held its fiftieth congress from March 28 to 31 at Wiesbaden under the presidency of Professor Assmann of Königsberg. The subjects dealt with were the testing of cardiac function, disorders of the suprarenal capsules, and acute inflammatory conditions of the central nervous system. One day was devoted to papers and discussions on vitamins B_1 and B_2.

The fifty-first Congress of the French Society of Ophthalmology will be held in Paris from May 16 to 19, when M. Hambresin of Brussels will read a paper on shock treatment in ophthalmology. Further information can be obtained from M. René Onfray, 6, Avenue de la Motte-Picquet, Paris VIIe.

In view of the great attention which is being paid at the present time to the disinfestation of houses and furniture from the bed bug, the Royal Sanitary Institute will hold a further course of instruction in disinfestation work, beginning on Monday, May 16, and lasting for two weeks. Particulars can be had from the secretary of the Institute, 90, Buckingham Palace Road, S.W.1.

On March 26 Queen Mary laid the foundation-stone of the new hospital which the Surrey County Council is building at Carshalton to meet the needs of the St. Helier housing estate. The hospital is to contain 862 beds, and will cost £1,000,000.

Dr. Edward W. Archibald, formerly head of the department of surgery, McGill University of Montreal, recently received the honorary degree of doctor of medicine from the University of Paris at a ceremony at McGill.

The Privy Council has nominated Sir Walter Langdon-Brown, M.D., and Professor W. J. Dilling, M.B., of Liverpool University, to serve on the Council of the Pharmaceutical Society, in succession to Sir Humphry Rolleston and Professor J. A. Gunn, who have retired.

The Council of the Harveian Society of London has chosen "The Value of Periodic Medical Examination in the Detection of Disease in Middle Life" as the subject for the Buckston Browne Prize, which consists of a medal together with the sum of £100. The prize is open to any member of the medical profession registered in the British Isles or Dominions and is limited to candidates under 45 years of age. Essays must be sent in by October 1, 1939, to the treasurer of the Society, Mr. Cecil Wakeley, 14, Devonshire Street, Portland Place, W.1.

A gold medal is awarded annually by the Hunterian Society for the best essay written by a registered general practitioner resident within the British Empire on a subject set by the society. Competitors—men or women—must be engaged in general practice. The essay must be unpublished and original and be based on the candidate's own observation, but it may contain excerpts from the literature on the subject provided reference is made to the articles from which they are taken. The subject for 1938 is "The Management of Inoperable Malignant Disease in General Practice," and for 1939, "Treatment of Obesity in General Practice." Candidates should obtain a copy of the rules governing the competition from the honorary secretary, Mr. Arthur Porritt, 27, Harley Street, W.1, before sending in their essays, which must reach him by December 31. The gold medal for 1937 was awarded to Dr. J. Wilson Reid of Anglesey for his essay on "The Prognosis and Care of Heart Disease in General Practice."

The Save the Children Fund (20, Gordon Square, London, W.C.1), which is engaged in the promotion of child welfare at home and abroad, announces that its panel of honorary medical advisers has been enlarged and now consists of the following: Sir Francis Fremantle, M.P., M.D., F.R.C.P.; Dame Louise McIlroy, M.D., F.C.O.G.; Eric Pritchard, M.D., F.R.C.P.; and Matthew B. Ray, D.S.O., M.D. Mrs. Susan Isaacs, D.Sc., the psychologist, has become associated with the Fund as a vice-president, and Dr. Ray also fills this office as well as being an honorary medical adviser.

Gifts amounting in all to £6,000 have been received in aid of a scheme for a fracture clinic at the Hull Royal Infirmary. The scheme is the outcome of an address given at Hull by Mr. Rowley Bristow on the modern treatment of fractures. To complete the organization a further sum of £4,000 is needed.

In order to meet the need for leaders of physical recreation, the Central Council of Recreative Physical Training has arranged a three-months course for women at Anstey College, Birmingham, from April 29 to July 22; a three-months course for men at Loughborough College; summer training camps for men to be held at the Sir William Dunn Camping Ground, Downe, Kent, from July 30 to August 6 and from August 6 to August 13, and at the Heswall Camp, Cheshire, from August 20 to August 27; and a summer school for women to be held at Milton Mount College, Crawley, Sussex, from July 29 to August 13. Further details can be obtained on application to the Secretary of the Council at Abbey House, Victoria Street, London, S.W.1.

At the beginning of this year the *Journal of the National Institute of Industrial Psychology* was issued in a new form as a quarterly under the title of *Occupational Psychology* at the price of 5s. It includes among other things an article by Dr. Charles Myers on "The Mental Hygiene of Intellectual Work," and one by Dr. A. H. Davis on "Some Aspects of the Problem of Noise."

On April 22 the thirty-fifth anniversary of Dr. Smith Ely Jelliffe's editorship of the *Journal of Nervous and Mental Diseases* will be celebrated at the New York Academy of Medicine by a neuro-psychiatric symposium in the afternoon and a dinner in the evening. Dr. Adolph Meyer will open the symposium, and the other speakers are Drs. Earl D. Bond, George Draper, Frederick Tilney, Oskar Diethelm, and Karl Menninger. Dr. Foster Kennedy will preside at the dinner, and tributes to Dr. Jelliffe as psychiatrist and psychoanalyst, as a man, a neurologist, and a bibliophile will be paid by Drs. A. A. Brill, Louis Casemajor, Henry Alsop Riley, and Richard H. Hutchings.

The February issue of the *Bulletin de l'Office International d'Hygiène Publique* contains articles on typhus in the United States, Morocco, Tunisia, Czechoslovakia, and Soviet Russia; infantile mortality in the Argentine and Yugoslavia; public assistance in Italy; and the demography of the native population in the Belgian Congo. A special supplement is devoted to the demography of the French Colonies.

On April 2, at Kettner's Restaurant, Sir Henry Gauvain, the medical superintendent, was entertained to dinner by the past and present R.M.O.s of the Lord Mayor Treloar Cripples' Hospital, Alton, to commemorate the silver wedding of Sir Henry and Lady Gauvain and the thirtieth anniversary of the hospital. Dr. C. E. M. Jones, who has been a R.M.O. for nineteen years, was in the chair.

A National Institute of Nutrition has recently been founded at Buenos Aires under the Ministry of Foreign Relations.

On April 1 a law came into force in Germany by which parrots and similar birds kept for profit or pleasure are to be registered and wear a ring on their claws with the name of the owner; those that are sick or suspect must be killed. Offenders will be punished with imprisonment not exceeding three years and fines not exceeding RM. 10,000.

The Paris Académie des Sciences has nominated Dr. Leriche, professor of surgery in the Strasbourg faculty of medicine, to fill the chair of medicine at the Collège de France rendered vacant by the death of Charles Nicolle.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

QUERIES AND ANSWERS

Purity of Water

"T. G. P." writes: The water supplied by a company is obtained from deep wells sunk in the chalk and is softened by Clarke's process. Occasionally it is of a milky appearance, with a deposit on standing. This occurs more particularly when repairs are made to the mains, or when a large quantity is drawn off by the fire hydrants. Is this deposit likely to be injurious to the health of consumers? Some of them appear to think that it may be.

"Lower Critical Temperature"

Dr. G. A. FERRABY (Worthing) writes: I am told there is a "lower critical temperature" below which the automatic temperature-regulating centre ceases to be effective, as it does above 105° F. or a little over. I have been unable to find out what this "lower critical temperature" is. Can anyone give me the correct figure or a reference to the literature?

Painful Heel

Sir MORTON SMART writes in reply to "D. C.'s" inquiry (March 26, p. 712): The fact that the *x*-ray examination shows points of calcification suggests that the condition is similar to that which arises from a true os calcis spur, the pain of which is usually brought about by bruising of the tissues of the heel on the spur. Many cases of os calcis spur exist but cause no pain until the underlying tissues are damaged by a blow or by jumping on the heel. Even the most painful heels from this cause can be cured by wearing a special support which I designed and which is made to fit the particular case by Mr. P. Frantz, 55A, Catherine Place, Westminster, S.W.1. It must be realized that the support may have to be worn for some weeks before complete relief of pain results, as the object of the support is to prevent pressure on the tissues of the heel and thereby allow the traumatized tissues to recover.

Income Tax

Semi-domestic Expenses

"YARRUM'S" household consists of himself, his wife, both working whole-time in the practice, and a cook and housemaid. Hitherto he has claimed as a professional expense only one-half of one maid's wages. His accountant suggests that he should claim the whole of her wages plus 20s. a week for board, "for the reason that the wife is in practice and therefore the extra maid is employed because of this and is an expense of the practice."

*** Assuming that there are consulting and waiting rooms on the premises, and that the maid attends to callers and the telephone, we agree that our correspondent is entitled to deduct most, if not all, of the wages and board of one maid, but it is inadvisable to put forward the reason suggested above. There is a judicial decision that the cost of a domestic servant necessary to relieve a wife for teaching work was not a deductible expense—it was not incurred "in carrying out" the teaching duties. That case was argued under Schedule E, but the principle seems to apply to Schedule D also, and would no doubt be relied on to refuse "Yarrum's" claim if made on such grounds.

LETTERS, NOTES, ETC.

Herniation of an Inflamed Appendix

Dr. N. CARWARDINE COOPER (Somerset) writes: The following case of appendicitis occurring in a hernial sac may be of interest on account of the patient's age. A boy, aged 1, was admitted to the Weston-super-Mare General Hospital with a diagnosis of strangulated right inguinal hernia. The hernial swelling was definitely irreducible but not tense. The child was crying loudly, and it was therefore difficult to tell whether the swelling was tender or not. The temperature was normal but the pulse rate was 160. I operated through the usual herniotomy incision, and on opening the sac a certain amount of clear fluid escaped. The lower part of the caecum and appendix were in the sac and were oedematous. The appendix, which was swollen and tense, was removed, the gut was returned to the abdomen, and the hernial sac ligated; the child made an uneventful recovery. On opening the appendix the mucous membrane was plum-coloured and definitely in an acute stage of inflammation.

Swallowed Safety-pin

Dr. L. ELWELL-JOHNSTON (Wimbledon) writes: Recently I saw a 5-months old infant that had swallowed a safety-pin twenty-four hours previously. On inspecting the throat the "safety" end of the pin could be seen below the lower pole of the left tonsil. An attempt to remove it with sinus forceps failed. The infant cried lustily, and the pin descended to a lower level and was scarcely visible. Substituting fingers for forceps, the pin was held firmly against the lateral aspect of the throat, then grasped with forceps. As the pin was open it was unsafe to bring it forward through the mouth, so it was pushed up behind the soft palate and the other end pulled out. Thus was delivered the safety-pin, rusty, and one and a quarter inches long; no injury was apparent. While the pin was in the throat the baby had had some difficulty in swallowing, and was fussy during the night. The mother said that when holding the baby on her lap the day before she had stuck this pin in her blouse. Afterwards when she wanted it she could not find it. Doubtless the pin had dropped into the infant's open mouth.

Sodium Salicylate Tolerance

Dr. C. TRIST GASKING (Harrogate) writes: Sodium salicylate probably still occupies the first place among drugs in the treatment of rheumatism. The following cases throw some light on the question of dosage and the duration of treatment. In 1924 I was consulted by a man for a trivial condition, and found him extremely deaf. He was in the early sixties, and informed me that ten years earlier, while working at Woolwich Arsenal, he had been subject to attacks of muscular rheumatism. A friend had told him that sodium salicylate was a cure for this condition. Acting upon that advice, and finding relief, he had persuaded his wife to do likewise. Between them they had taken an ounce of the preparation a week for ten years. Apart from being almost stone deaf and completely edentulous, they had remained well and quite free from any rheumatic symptoms

Nelson's Sea-sickness

"A. F. H." writes: In view of Mr. A. J. Wright's reference to Nelson in his paper on labyrinthine giddiness in your issue of March 26 (p. 668) the following sentence from an autograph letter in my possession written by Nelson from H.M.S. *Medusa* on August 21, 1801, to Nicholas Vansittart, the British envoy to Copenhagen, may be of interest. "I am so miserably sea-sick that I can scarcely hold up my head."

Swedenborg Stamps

To commemorate the 250th anniversary of Swedenborg's birth, which was noticed in these columns on January 29, page 239, Sweden has recently issued two dignified and pleasing stamps, a violet 10-öre and a greenish 100-öre. The design is by the artist Torsten Schonberg after a portrait by Per Krafft the Elder. A laurel branch roofs the legend "Emanuel Swedenborg. 1688-1938." A variety of the 10-öre stamp is perforated all round and is described as scarce.

Toxic Foci

Dr. SYDNEY PERN (Ballarat, Australia) writes: The appearance of a letter entitled "Toxic Focus with Ophthalmic and Dermic Reactions" by Dr. J. E. Martin in the *Journal* of July 10, 1937 (p. 88), has prompted me to make these few remarks. It is an astounding thing that after so many years of knowledge of this subject so many of these foci are overlooked. I would like to mention a few traps that many fall into. First, as regards apical infection of teeth, *x*-ray films are not reliable evidence of infection. It has been shown that 98 per cent. of all dead teeth, with no signs of apical infection on the film, show definite infection on culture; in other words, all dead teeth can be accepted as infected. This fact ought to be known to all medical men and dentists. The only evidence of gingival infection that can be relied on, if in doubt, is to take cultures from pockets, however small, with a platinum wire. Unerupted wisdom teeth are often overlooked, and are always infected. Broken roots, usually infected, are found with surprising frequency in edentulous jaws, as are granulomas which have broken off from extracted teeth, the finding and removal of which often yield astounding results. As regards tonsils, a casual glance at an anaemic-looking tonsil is usually enough to pronounce it uninfected, when it often contains virulent organisms. Frequently no attempt is made to retract the anterior pillars, and if no tonsil is visible it is passed as not being a source of infection. If there is any tonsil tissue visible cultures should be taken from the centre, preferably with a capillary glass tube, and if this is done sufficiently often it will be found that practically all tonsils are infected, because if not infected they naturally atrophy. Sinus infection is more often overlooked than any other. I found that in my out-patient clinic 25 per cent. of the patients were so infected. It is comparatively easily diagnosed by a chronic dropping of mucopus from behind the palate, because where there is pus there must be infection. Morning headaches and liability to frequent colds are usually present; *x*-ray films can be misleading. Bad headaches, often occipital, without any discharge may mean locked-up pus. Infected gall-bladders are often the cause of many troubles, and may present very few symptoms. Pyelitis is commonly overlooked, as is prostatic infection. Cervical infection in women does not get nearly the attention it should. These are the usual sources of infection, and if carefully examined will nearly always yield results. It is very unwise to be content with finding only one focus of infection, as they are frequently multiple, and unless all are removed improvement cannot be obtained.

Insulin as a Suicidal Agent

However secure their position in relieving the burden of suffering humanity, few medicinal agents are exempt from being misused by criminals or by writers of fiction when murder or suicide demands efficient weapons. This is true of insulin. In Dr. W. Stanley Sykes's story, *The Missing Moneylender* (1931) a doctor kills his victim with an overdose of insulin, after his death injecting enough sugar intravenously to restore the blood sugar to its normal figure and thus to abolish the only possible clue. The first case in the literature of attempted suicide by insulin was reported in 1934 by J. T. Beardwood, jun. (*Journal of the American Medical Association*, **102**, 765). The patient was a diabetic, and the dose employed was 390 units. Two other cases are briefly mentioned in this paper, one of which was a Philadelphia physician. A fourth case is now described by D. Donald and L. J. Foster in the December number of the *Journal of the Michigan State Medical Society* (**36**, 967). The story, however, both in its clinical and biochemical aspects, is complicated by acute alcoholism. A man aged 26 (non-diabetic) had heard from a doctor that it was presumably possible to kill a person with insulin without leaving a trace of the cause of death. While in a state of intoxication he took an overdose of 200 units. Admitted to hospital in coma, he remained unconscious for nearly three days, but finally recovered. The persistence of coma for forty-eight hours after the blood sugar had returned to normal was probably due to alcohol. He had made a previous attempt at suicide by slashing his wrist with a razor blade.

Treatment of Parasitic Conditions

Dr. F. G. CAWSTON (Durban, South Africa) writes: Clonorchis infection has fortunately not been recorded from South Africa and would seem to be confined to Sino-Japanese areas where fish is eaten raw, but reported success in treating this parasitic disease with a gold preparation suggests that the same drug might be of service in allied conditions such as schistosomiasis. Though this line of treatment was suggested to me some time ago I have not heard that it has been attempted. In 1922 I treated hydatid disease successfully with emetine hydrochloride. Judging from the analogous conditions emetine would seem to hold out the greatest promise of success in the treatment of hydatid disease other than by surgical measures, but I can find no reference to its use since I brought the treatment to the notice of medical men in Cyprus and Australia, where cases were being encountered. In 1927 Bougenault suggested that antimony in the form of an ointment might be employed for the treatment of bilharziasis occurring in children with inconveniently small veins. The typical rash from the use of antimony ointments is readily controlled and does not occur when the drug is introduced into the rectum. Success has been said to follow the introduction into the bowel of large doses of tartar emetic, but, as with other alleged cures, the reports do not record the recovery of antimony in the urine or an increasing proportion of dead ova escaping with the excreta. Evidence is still wanting to show that enough of a drug can be absorbed by skin or mucous membranes to cause the death of large blood parasites, but an early effect on schistosomes by the oral administration of carbon tetrachloride, or antimony applied to the skin and bowel wall, suggests that some new line of treatment may yet be devised which will render a course of intravenous injections of tartar emetic, or even intramuscular injections of anthiomaline, unnecessary. Due consideration of the elimination of antimony supports the use of intravenous therapy for adult blood parasites. The drug may be very rapidly eliminated, and I have noted marked discoloration of the urine within a few minutes of injecting the oxyquinoline derivatives.

Strychnine Poisoning

"B. L. T." writes: A girl of 20 was brought to me at 2.50 a.m. one night with the story that she had just swallowed a chocolate she had herself filled with strychnine. Gastric lavage was begun soon after 3 a.m. immediately after the first emptying of the stomach, which seemed to contain very little; great difficulty was experienced owing to biting of the tube by the patient. This prevented any further lavage, and was thought to be due to the girl's obstinacy until, with dramatic suddenness, she became quite rigid in a strychnine convulsion. She was hurried off to hospital, where at 3.40 a.m. I gave her 10 c.cm. of sodium evipan intravenously. At once she relaxed into a quiet narcosis. By 4 a.m. she was again having single convulsions, which by 4.15 were again becoming tonic, so that at 4.20 another 10 c.cm. of evipan were given. At 5.25 a third dose of 10 c.cm. was necessary; a smaller dose would have sufficed, because the injection was followed at once by exceedingly shallow respiration for about five minutes. However, when the effect of this last injection of evipan wore off there were only occasional violent twitches. The next day there was a little pyrexia but no muscle stiffness such as might have been expected after such violent contractions. The patient brought me later a little talc powder corresponding to the amount she thought she had taken from a bottle of strychnine nitrate in a laboratory to which she had access. A comparable quantity of strychnine nitrate was found to weigh 35 centigrammes, and this the girl had put in the interior of a chocolate cream and had swallowed on an empty stomach, so that, allowing for a considerable margin of error, one can presume that she had taken a fatal dose.

British Drug Houses, Ltd. (Graham Street, City Road, N.1), have issued a booklet summarizing recent advances in knowledge of the vitamins, with particular reference to their own products. Any reader who has not received a copy can have one free of charge, postage paid, on application to the firm.